APPENDIX U

90th Percentile Temperature Calculations

ADJUSTMENT OF 90TH PERCENTILE TEMPERATURES

Temperature data for LDEQ Station 0910
Data retreived from LDEQ website (http://www.deq.state.la.us/surveillance/wqdata/wqnsites.stm)

DATE	LDEQ 0910 WATER TEMP (C)		DATE	LDEQ 0296 (Bayou Segnette) WATER TEMP (C)	
12/5/2000	11.13	winter	12/19/2000	11.7	winter
10/31/2000	24.62	summer	11/14/2000	16.2	winter
10/3/2000	25.18	summer	10/17/2000	22.3	summer
9/12/2000	28.48	summer	9/19/2000	26.7	summer
8/8/2000	31.31	summer	8/22/2000	31.3	summer
7/11/2000	31.73	summer	7/25/2000	30.0	summer
6/13/2000	29.14	summer	6/27/2000	28.6	summer
5/9/2000	27.12	summer	5/23/2000	28.9	summer
4/11/2000	19.2	winter	4/25/2000	23.6	winter
3/14/2000	19.42	winter	3/28/2000	22.9	winter
2/8/2000	12.14	winter	2/22/2000	18.3	winter
1/11/2000	17.09	winter	1/25/2000	12.5	winter

SUMMER
Averages for May through October (LTP definition of summer)

28.23	27.97

Difference between stations = 0.26 C

From Previous page, 90th percentile summer temp for Bayou Segnette = 30.89 C

Adjusted 90th percentile temp for Station 0910 = 30.89 + 0.26 = 31.15 C

FILE: R:\PROJECTS\2110-611\CD_LAKE_CAT\APP U 90TH PERC TEMP\90TH PERCENTILE TEMPS 0910.XLS

90TH PERCENTILE TEMPERATURES

Bayou Segnette near Westwego, Louisiana (020701 station 0296)
Data retreived from LDEQ website (http://www.deq.state.la.us/surveillance/wqdata/wqnsites.stm)

summer 90th percentile 30.89 interpolated
winter 90th percentile 22.74 interpolated

DATE	WATER TEMP (C)	Season	Percentile	DATE	WATER TEMP (C)	Season	Percentile
8/12/1997	20.69	summer	1.04	1/9/1996	6.85	winter	0.96
10/15/1996	21.89	summer	3.13	1/11/1994	10.61	winter	2.88
10/11/1994	21.95	summer	5.21	12/12/1995	10.82	winter	4.81
10/13/1992	22.05	summer	7.29	2/14/1995	10.94	winter	6.73
5/10/1994	22.31	summer	9.38	3/12/1996	11.61	winter	8.65
10/17/2000	22.33	summer	11.46	12/19/2000	11.66	winter	10.58
10/10/1995	22.36	summer	13.54	2/9/1993	12.02	winter	12.50
6/11/1991	23.00	summer	15.63	1/25/2000	12.46	winter	14.42
10/12/1993	23.20	summer	17.71	2/10/1998	12.91	winter	16.35
5/13/1997	23.99	summer	19.79	11/18/1997	13.00	winter	18.27
10/14/1997	24.60	summer	21.88	2/11/1992	13.20	winter	20.19
5/11/1993	24.71	summer	23.96	1/15/1991	13.30	winter	22.12
5/12/1992	25.41	summer	26.04	1/7/1992	13.31	winter	24.04
7/12/1994	26.05	summer	28.13	2/18/1997	13.40	winter	25.96
9/19/2000	26.73	summer	30.21	1/10/1995	13.58	winter	27.88
5/14/1996	26.87	summer	32.29	12/13/1994	13.59	winter	29.81
6/10/1997	27.50	summer	34.38	12/14/1993	13.66	winter	31.73
6/13/1995	27.53	summer	36.46	2/13/1996	13.90	winter	33.65
5/12/1998	27.76	summer	38.54	3/10/1998	14.48	winter	35.58
8/13/1996	28.04	summer	40.63	12/9/1997	14.71	winter	37.50
9/12/1995	28.05	summer	42.71	12/10/1996	15.16	winter	39.42
9/10/1991	28.10	summer	44.79	11/17/1992	15.41	winter	41.35
9/14/1992	28.27	summer	46.88	1/7/1997	15.68	winter	43.27
7/9/1996	28.30	summer	48.96	11/14/1995	15.81	winter	45.19
8/13/1991	28.60	summer	51.04	11/14/2000	16.17	winter	47.12
6/27/2000	28.61	summer	53.13	12/15/1992	16.26	winter	49.04
9/13/1994	28.62	summer	55.21	4/15/1997	16.28	winter	50.96
9/9/1997	28.76	summer	57.29	1/13/1998	16.39	winter	52.88
5/23/2000	28.91	summer	59.38	2/4/1991	16.70	winter	54.81
6/11/1996	28.97	summer	61.46	3/14/1995	16.74	winter	56.73
5/14/1991	29.00	summer	63.54	12/10/1991	16.95	winter	58.65
9/10/1996	29.01	summer	65.63	3/9/1993	17.26	winter	60.58
6/14/1994	29.03	summer	67.71	3/15/1994	17.45	winter	62.50
8/11/1992	29.12	summer	69.79	2/8/1994	17.94	winter	64.42
7/13/1993	29.15	summer	71.88	1/12/1993	18.26	winter	66.35
9/14/1993	29.17	summer	73.96	2/22/2000	18.29	winter	68.27
7/16/1991	29.30	summer	76.04	3/12/1991	18.30	winter	70.19
8/9/1994	29.33	summer	78.13	11/18/1991	18.59	winter	72.12
6/16/1992	29.85	summer	80.21	4/9/1996	19.00	winter	74.04
7/25/2000	29.95	summer	82.29	4/7/1992	19.20	winter	75.96

7/15/1997	29.95	summer	84.38
8/15/1995	30.19	summer	86.46
7/11/1995	30.69	summer	88.54
8/10/1993	30.97	summer	90.63
8/22/2000	31.29	summer	92.71
10/15/1991	31.48	summer	94.79
7/14/1992	31.61	summer	96.88
6/15/1993	33.55	summer	98.96

11/19/1996	19.67	winter	77.88
4/4/1995	19.83	winter	79.81
11/16/1993	20.26	winter	81.73
3/10/1992	21.08	winter	83.65
11/15/1994	21.41	winter	85.58
3/11/1997	22.41	winter	87.50
4/13/1993	22.70	winter	89.42
4/14/1998	22.83	winter	91.35
3/28/2000	22.88	winter	93.27
4/16/1991	23.50	winter	95.19
4/25/2000	23.57	winter	97.12
4/12/1994	24.20	winter	99.04

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APPENDIX V

Calculation of K_L (Projection)

Wind Aided Reaeration for Lake Cataouatche Projection (020303)

Wind Aided Reaeration Coefficient Equation (Eq.3-23 from Rates, Constants, and Kinetics publication)

$K_{L\ with\ wind} = K_{L\ without\ wind}\ [1+(0.2395V_w^{1.643})]$ **Equation 1**

V_w = wind velocity in meters per second
K_2 = reaeration in 1/day that does not account for wind effects. For Louisiana equation use $K_2 = 0.664/D$.
D = depth in meters
$K_L = K_2 * D$ (=oxygen transfer coefficient "a" in model)

Formula to correct wind speed for elevation (obtained from LDEQ):

$V_{w@\ height\ z} = V_{w@\ height\ s}[(z/s)^{0.143}]$ **Equation 2**

CALCULATIONS FOR PROJECTION:

Long term average wind speed for August = 5.9 mph
= 5.1 knots

August was month with lowest average wind speed for summer months (May-Oct)

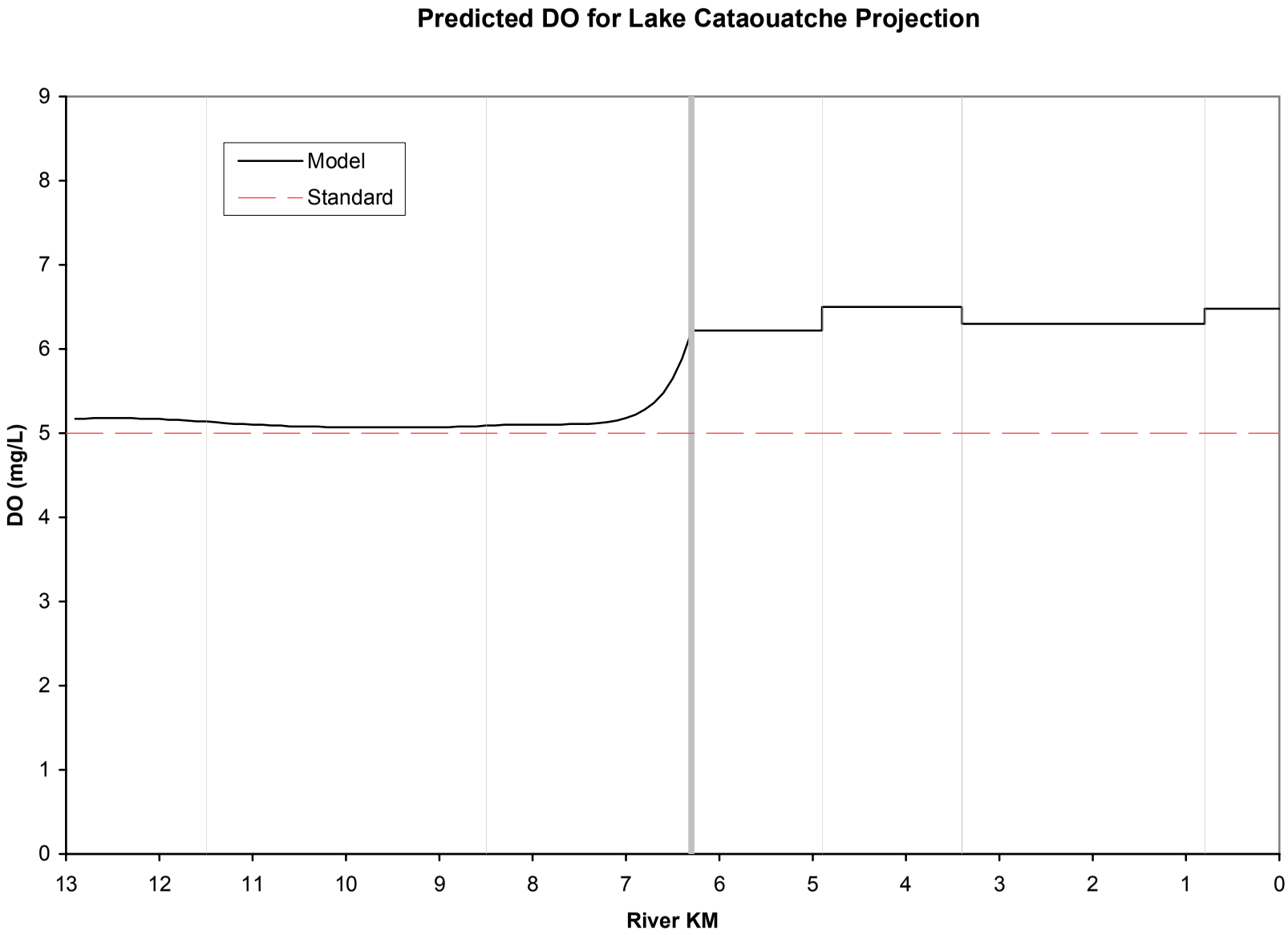
Source of long term average wind speed : NOAA (2001)

Station	Average Wind Speed (knots)	Average Wind Speed (m/s)	Height of Wind Measurement (m)	Height for Calculating Wind-Aided K_L (m)	Wind Speed at Surface using Eqn 2 (m/s)	K_L without wind (m/day)	K_L with wind using Eqn 1 (m/day)
New Orleans Intl. Airport	5.1	2.6	10	0.1	1.4	0.664	0.93

FILE: R:\PROJECTS\2110-611\CD_LAKE_CAT\APP V CALC KL (PROJ)\PROJECTION WIND SPEED.XLS

APPENDIX W

Plot of Projection Model DO


Predicted DO for Lake Cataouatche Projection
Model
Standard
DO (mg/L)
River KM
0
1
2
3
4
5
6
7
8
9
13
12
11
10
9
8
7
6
5
4
3
2
1
0

APPENDIX X

Printout of Projection Model Output

TEXAS WATER COMMISSION WATER QUALITY STREAM MODEL
QUAL-TX VERSION 3.3 UPDATED DECEMBER 3, 1990

02/10/04
17:01:15

$$$ DATA TYPE 1 (TITLES AND CONTROL CARDS) $$$

CARD TYPE		CONTROL TITLES
CNTROL01		QUAL-TX projection for Lake Cataouatche, LA
CNTROL02		60% reduction in Bayou
CNTROL03	YES	ECHO
CNTROL04	NO	CAPS
CNTROL05	NO	INTE
CNTROL06	YES	FINA
CNTROL07	YES	LOAD
CNTROL08	YES	METR
CNTROL09	YES	OXYG
CNTROL10	YES	OVER
ENDATA01		

$$$ DATA TYPE 2 (MODEL OPTIONS) $$$

CARD TYPE		MODEL OPTION	
MODOPT01	NO	TEMP	
MODOPT02	NO	SALI	
MODOPT04	YES	CONSERVATIVE MATERIAL I = cond	IN umhos
MODOPT04	NO	CONSERVATIVE MATERIAL II	
MODOPT05	YES	DISS	
MODOPT06	YES	BIOC	
MODOPT07	YES	NITR	
MODOPT08	YES	PHOS	
MODOPT09	YES	CHLO	
MODOPT10	NO	MACR	
MODOPT11	NO	COLI	
MODOPT12	NO	NONC	
ENDATA02			

$$$ DATA TYPE 3 (PROGRAM CONSTANTS) $$$

CARD TYPE	DESCRIPTION OF CONSTANT		VALUE
PROGRAM	MAXIMUM ITERATION LIMIT	=	5000.00000
PROGRAM	TOTAL DAILY RADIATION	=	416.00000
PROGRAM	P RELAXATION COEFFICIENT	=	0.10000
PROGRAM	P ERROR CLOSURE LIMITS	=	0.00500
ENDATA03			

$$$ DATA TYPE 4 (TEMPERATURE CORRECTION CONSTANTS FOR RATE COEFFICIENTS) $$$

CARD TYPE	RATE CODE	THETA VALUE
THETA	NH3 DECA	1.07000
THETA	BENTHAL	1.06500
THETA	ORGN DEC	1.02000

ENDATA04

$$$ CONSTANTS TYPE 5 (TEMPERATURE DATA) $$$

CARD TYPE	DESCRIPTION OF CONSTANT	VALUE

ENDATA05

$$$ DATA TYPE 6 (ALGAE CONSTANTS) $$$

CARD TYPE	DESCRIPTION OF CONSTANT		VALUE
LIGHT	LIGHT SATURATION CONSTANT	=	10.00000
N HALF	N HALF SATURATION CONSTANT	=	0.20000
P HALF	P HALF SATURATION CONSTANT	=	0.03000

ENDATA06

$$$ DATA TYPE 7 (MACROPHYTE CONSTANTS) $$$

CARD TYPE	DESCRIPTION OF CONSTANT	VALUE

ENDATA07

$$$ DATA TYPE 8 (REACH IDENTIFICATION DATA) $$$

CARD TYPE	REACH	ID	NAME	BEGIN REACH KM		END REACH KM	ELEM LENGTH KM	REACH LENGTH KM	ELEMS PER RCH	BEGIN ELEM NUM	END ELEM NUM
REACH ID	1	B1	Bayou Verret #1	13.00	TO	11.50	0.1000	1.50	15	1	15
REACH ID	2	B2	Bayou Verret #2	11.50	TO	8.50	0.1000	3.00	30	16	45
REACH ID	3	B3	Bayou Verret #3	8.50	TO	6.30	0.1000	2.20	22	46	67
REACH ID	4	L1	Lake Cataouatche #1	6.30	TO	4.90	1.4000	1.40	1	68	68
REACH ID	5	L2	Lake Cataouatche #2	4.90	TO	3.40	1.5000	1.50	1	69	69
REACH ID	6	L3	Lake Cataouatche #3	3.40	TO	0.80	2.6000	2.60	1	70	70
REACH ID	7	L4	Lake Cataouatche #4	0.80	TO	0.00	0.8000	0.80	1	71	71

ENDATA08

$$$ DATA TYPE 9 (ADVECTIVE HYDRAULIC COEFFICIENTS) $$$

CARD TYPE	REACH	ID	VELOCITY "A"	VELOCITY "B"	DEPTH "C"	DEPTH "D"	DEPTH "E"	MANNINGS "N"
HYDR-1	1	B1	0.00622000	1.000	2.700	0.000	0.000	0.000
HYDR-1	2	B2	0.00573000	1.000	2.400	0.000	0.000	0.000
HYDR-1	3	B3	0.00539000	1.000	2.100	0.000	0.000	0.000
HYDR-1	4	L1	0.00014200	1.000	2.200	0.000	0.000	0.000
HYDR-1	5	L2	0.00007300	1.000	2.400	0.000	0.000	0.000
HYDR-1	6	L3	0.00007300	1.000	2.500	0.000	0.000	0.000
HTDR-1	7	L4	0.00006580	1.000	1.800	0.000	0.000	0.000
ENDATA09								

$$$ DATA TYPE 10 (DISPERSIVE HYDRAULIC COEFFICIENTS) $$$

CARD TYPE	REACH	ID	TIDAL RANGE	DISPERSION "A"	DISPERSION "B"	DISPERSION "C"	DISPERSION "D"
HYDR-2	1	B1	1.00	0.500	0.000	0.000	0.000
HYDR-2	2	B2	1.00	0.500	0.000	0.000	0.000
HYDR-2	3	B3	1.00	0.500	0.000	0.000	0.000
HYDR-2	4	L1	1.00	2.600	0.000	0.000	0.000
HYDR-2	5	L2	1.00	2.600	0.000	0.000	0.000
HYDR-2	6	L3	1.00	2.600	0.000	0.000	0.000
HYDR-2	7	L4	1.00	2.600	0.000	0.000	0.000
ENDATA10							

$$$ DATA TYPE 11 (INITIAL CONDITIONS) $$$

CARD TYPE	REACH	ID	TEMP	SALIN	DO	NH3	NO3+2	PHOS	CHL A	MACRO
INITIAL	1	B1	31.20	0.70	2.60	0.22	0.05	0.20	8.50	0.00
INITIAL	2	B2	31.20	0.69	2.80	0.23	0.05	0.21	14.80	0.00
INITIAL	3	B3	31.20	0.67	2.50	0.24	0.05	0.22	21.00	0.00
INITIAL	4	L1	31.20	0.52	5.00	0.18	0.05	0.15	13.00	0.00
INITIAL	5	L2	31.20	0.80	6.70	0.12	0.05	0.08	5.00	0.00
INITIAL	6	L3	31.20	0.99	6.70	0.13	0.05	0.02	28.00	0.00
INITIAL	7	L4	31.20	1.01	6.70	0.13	0.05	0.04	22.80	0.00
ENDATA11										

$$$ DATA TYPE 12 (REAERATION, SEDIMENT OXYGEN DEMAND, BOD COEFFICIENTS) $$$

CARD TYPE	REACH	ID	K2 OPT	K2 "A"	K2 "B"	K2 "C"	BKGRND SOD	AEROB BOD DECAY	BOD SETT	BOD CONV TO SOD	ANAER BOD DECAY
COEF-1	1	B1	1.	0.240	0.000	0.000	0.640	0.050	0.000	0.000	0.000
COEF-1	2	B2	1.	0.280	0.000	0.000	0.720	0.050	0.000	0.000	0.000
COEF-1	3	B3	1.	0.310	0.000	0.000	0.720	0.050	0.000	0.000	0.000
COEF-1	4	L1	1.	0.420	0.000	0.000	0.300	0.050	0.000	0.000	0.000
COEF-1	5	L2	1.	0.390	0.000	0.000	0.000	0.050	0.000	0.000	0.000
COEF-1	6	L3	1.	0.370	0.000	0.000	0.000	0.050	0.000	0.000	0.000
COEF-1	7	L4	1.	0.520	0.000	0.000	0.000	0.050	0.000	0.000	0.000

ENDATA12

$$$ DATA TYPE 13 (NITROGEN AND PHOSPHORUS COEFFICIENTS) $$$

CARD TYPE	REACH	ID	ORG-N DECA	ORG-N SETT	ORGN CONV TO NH3 SRCE	NH3 DECA	NH3 SRCE	PHOS SRCE	DENIT RATE
COEF-2	1	B1	0.010	0.00	1.00	0.050	0.0010	0.0025	0.00
COEF-2	2	B2	0.010	0.00	1.00	0.050	0.0014	0.0025	0.00
COEF-2	3	B3	0.010	0.00	1.00	0.050	0.0010	0.0025	0.00
COEF-2	4	L1	0.010	0.00	1.00	0.100	0.0100	0.0000	0.00
COEF-2	5	L2	0.010	0.00	1.00	0.100	0.0100	0.0000	0.00
COEF-2	6	L3	0.010	0.00	1.00	0.100	0.0125	0.0000	0.00
COEF-2	7	L4	0.010	0.00	1.00	0.100	0.0075	0.0000	0.00

ENDATA13

$$$ DATA TYPE 14 (ALGAE AND MACROPHYTE COEFFICIENTS) $$$

CARD TYPE	REACH	ID	SECCHI DEPTH	ALGAE: CHL A	ALGAE SETT	ALG CONV TO SOD	ALGAE GROW	ALGAE RESP	MACRO GROW	MACRO RESP
COEF-3	1	B1	1.00	0.060	0.50	0.08	1.35	0.10	0.00	0.00
COEF-3	2	B2	1.00	0.060	0.50	0.08	1.35	0.10	0.00	0.00
COEF-3	3	B3	1.00	0.060	0.50	0.08	1.35	0.10	0.00	0.00
COEF-3	4	L1	1.00	0.060	0.20	0.08	0.80	0.10	0.00	0.00
COEF-3	5	L2	1.00	0.060	0.20	0.08	0.80	0.10	0.00	0.00
COEF-3	6	L3	1.00	0.060	0.20	0.08	0.80	0.10	0.00	0.00
COEF-3	7	L4	1.00	0.060	0.20	0.08	0.80	0.10	0.00	0.00

ENDATA14

$$$ DATA TYPE 15 (COLIFORM AND NONCONSERVATIVE COEFFICIENTS) $$$

CARD TYPE	REACH	ID	COLIFORM DIE-OFF	NCM DECAY	NCM SETT	NCM CONV TO SOD

ENDATA15

$$$ DATA TYPE 16 (INCREMENTAL DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) $$$

CARD TYPE	REACH	ID	OUTFLOW	INFLOW	TEMP	SALIN	CM-I	CM-II	INFLOW/DIST
ENDATA16									

$$$ DATA TYPE 17 (INCREMENTAL DATA FOR DO, BOD, AND NITROGEN) $$$

CARD TYPE	REACH	ID	DO	BOD	ORG-N	NH3	NO3+2
ENDATA17							

$$$ DATA TYPE 18 (INCREMENTAL DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$

CARD TYPE	REACH	ID	PHOS	CHL A	COLI	NCM
ENDATA18						

$$$ DATA TYPE 19 (NONPOINT SOURCE DATA) $$$

CARD TYPE	REACH	ID	BOD	ORG-N	COLI	NCM	DO
NONPOINT	1	B1	24.00	0.40	0.00	0.00	0.00
NONPOINT	2	B2	66.00	5.80	0.00	0.00	0.00
NONPOINT	3	B3	36.00	3.60	0.00	0.00	0.00
NONPOINT	4	L1	2000.00	100.00	0.00	0.00	0.00
NONPOINT	5	L2	3000.00	325.00	0.00	0.00	0.00
NONPOINT	6	L3	13280.00	750.00	0.00	0.00	0.00
NONPOINT	7	L4	2880.00	150.00	0.00	0.00	0.00
ENDATA19							

$$$ DATA TYPE 20 (HEADWATER FOR FLOW, TEMPERATURE, SALINITY AND CONSERVATIVES) $$$

CARD TYPE	ELEMENT	NAME	UNIT	FLOW	TEMP	SALIN	CM-I	CM-II
HDWTR-1	1	Bayou Verret	0	0.00300	31.200	0.720	1250.000	0.000
ENDATA20								

$$$ DATA TYPE 21 (HEADWATER DATA FOR DO, BOD, AND NITROGEN) $$$

CARD TYPE	ELEMENT	NAME	DO	BOD	ORG-N	NH3	NO3+2
HDWTR-2	1	Bayou Verret	3.20	4.03	1.19	0.22	0.05
ENDATA21							

$$$ DATA TYPE 22 (HEADWATER DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$

CARD TYPE	ELEMENT	NAME	PHOS	CHL A	COLI	NCM
HDWTR-3	1	Bayou Verret	0.20	12.00	0.00	0.00

ENDATA22

$$$ DATA TYPE 23 (JUNCTION DATA) $$$

CARD TYPE	JUNCTION ELEMENT	UPSTRM ELEMENT	NAME

ENDATA23

$$$ DATA TYPE 24 (WASTELOAD DATA FOR FLOW, TEMPERATURE, SALINITY, AND CONSERVATIVES) $$$

CARD TYPE	ELEMENT	NAME	FLOW	TEMP	SAL	CM-I	CM-II
WSTLD-1	68	LUMBER CANAL	0.00300	31.200	0.560	995.000	0.000
WSTLD-1	68	DAVIS POND	0.00300	31.200	0.170	300.000	0.000

ENDATA24

$$$ DATA TYPE 25 (WASTELOAD DATA FOR DO, BOD, AND NITROGEN) $$$

CARD TYPE	ELEMENT	NAME	DO	BOD	% BOD RMVL	ORG-N	NH3	% NITRIF	NO3+2
WSTLD-2	68	LUMBER CANAL	1.47	4.03	0.00	1.19	0.22	0.00	0.05
WSTLD-2	68	DAVIS POND	6.70	4.03	0.00	1.19	0.22	0.00	0.05

ENDATA25

$$$ DATA TYPE 26 (WASTELOAD DATA FOR PHOSPHORUS, CHLOROPHYLL, COLIFORM, AND NONCONSERVATIVES) $$$

CARD TYPE	ELEMENT	NAME	PHOS	CHL A	COLI	NCM
WSTLD-3	68	LUMBER CANAL	0.20	12.00	0.00	0.00
WSTLD-3	68	DAVIS POND	0.20	12.00	0.00	0.00

ENDATA26

$$$ DATA TYPE 27 (LOWER BOUNDARY CONDITIONS) $$$

CARD TYPE	CONSTITUENT		CONCENTRATION	
LOWER BC	TEMPERATURE	=	31.200	DEG C
LOWER BC	SALINTIY	=	0.950	PPT
LOWER BC	CONSERVATIVE MATERIAL I	=	1695.000	umhos
LOWER BC	CONSERVATIVE MATERIAL II	=	0.000	
LOWER BC	DISSOLVED OXYGEN	=	6.460	MG/L
LOWER BC	BIOCHEMICAL OXYGEN DEMAND	=	4.180	MG/L
LOWER BC	ORGANIC NITROGEN	=	1.010	MG/L
LOWER BC	AMMONIA NITROGEN	=	0.130	MG/L
LOWER BC	NITRATE + NITRITE NITROGEN	=	0.050	MG/L
LOWER BC	PHOSPHORUS	=	0.060	MG/L
LOWER BC	CHLOROPHYLL A	=	17.500	UG/L
LOWER BC	COLIFORM	=	0.000	#/100 ML
LOWER BC	NONCONSERVATIVE MATERIAL	=	0.000	

ENDATA27

$$$ DATA TYPE 28 (FLOW AUGMENTATION DATA) $$$

CARD TYPE	REACH	AVAIL HDWS	TARGET	ORDER OF AVAIL SOURCES

ENDATA28

$$$ DATA TYPE 29 (SENSITIVITY ANALYSIS DATA) $$$

CARD TYPE	PARAMETER	COL 1	COL 2	COL 3	COL 4	COL 5	COL 6	COL 7	COL 8

ENDATA29

$$$ DATA TYPE 30 (PLOT CONTROL CARDS) $$$

ENDATA30

.....NO ERRORS DETECTED IN INPUT DATA

.....HYDRAULIC CALCULATIONS COMPLETED

.....TRIDIAGONAL MATRIX TERMS INITIALIZED

.....PHOTOSYNTHETIC RATES CONVERGENT IN 805 ITERATIONS

.....OXYGEN DEPENDENT RATES CONVERGENT IN 1 ITERATIONS

.....CONSTITUENT CALCULATIONS COMPLETED

FINAL REPORT Bayou Verret
REACH NO. 1 Bayou Verret #1

QUAL-TX projection for Lake Cataouatche, LA
60% reduction in Bayou

********** REACH INPUTS **********

ELEM NO.	TYPE	FLOW CMS	TEMP DEG C	SALN PPT	CM-I *	CM-II *	DO MG/L	BOD MG/L	EBOD MG/L	ORGN MG/L	NH3 MG/L	NO3+2 MG/L	PHOS MG/L	CHL A UG/L	COLI #/100ML	NCM *
1	HDWTR	0.0030	31.20	0.72	1250.0	0.0	3.20	4.03	4.03	1.19	0.22	0.05	0.20	12.0	0.	0.00

********** HYDRAULIC PARAMETER VALUES **********

ELEM NO.	BEGIN DIST KM	ENDING DIST KM	FLOW CMS	PCT EFF	ADVCTV VELO M/S	TRAVEL TIME DAYS	DEPTH M	WIDTH M	VOLUME CU M	SURFACE AREA SQ M	X-SECT AREA SQ M	TIDAL PRISM CU M	TIDAL VELO M/S	DISPRSN SQ M/S	MEAN VELO M/S
1	13.00	12.90	0.0030	0.0	0.000	62.03	2.70	59.5	16077.	5954.5	160.8	0.	0.000	0.500	0.000
2	12.90	12.80	0.0030	0.0	0.000	62.03	2.70	59.5	16077.	5954.5	160.8	0.	0.000	0.500	0.000
3	12.80	12.70	0.0030	0.0	0.000	62.03	2.70	59.5	16077.	5954.5	160.8	0.	0.000	0.500	0.000
4	12.70	12.60	0.0030	0.0	0.000	62.03	2.70	59.5	16077.	5954.5	160.8	0.	0.000	0.500	0.000
5	12.60	12.50	0.0030	0.0	0.000	62.03	2.70	59.5	16077.	5954.5	160.8	0.	0.000	0.500	0.000
6	12.50	12.40	0.0030	0.0	0.000	62.03	2.70	59.5	16077.	5954.5	160.8	0.	0.000	0.500	0.000
7	12.40	12.30	0.0030	0.0	0.000	62.03	2.70	59.5	16077.	5954.5	160.8	0.	0.000	0.500	0.000
8	12.30	12.20	0.0030	0.0	0.000	62.03	2.70	59.5	16077.	5954.5	160.8	0.	0.000	0.500	0.000
9	12.20	12.10	0.0030	0.0	0.000	62.03	2.70	59.5	16077.	5954.5	160.8	0.	0.000	0.500	0.000
10	12.10	12.00	0.0030	0.0	0.000	62.03	2.70	59.5	16077.	5954.5	160.8	0.	0.000	0.500	0.000
11	12.00	11.90	0.0030	0.0	0.000	62.03	2.70	59.5	16077.	5954.5	160.8	0.	0.000	0.500	0.000
12	11.90	11.80	0.0030	0.0	0.000	62.03	2.70	59.5	16077.	5954.5	160.8	0.	0.000	0.500	0.000
13	11.80	11.70	0.0030	0.0	0.000	62.03	2.70	59.5	16077.	5954.5	160.8	0.	0.000	0.500	0.000
14	11.70	11.60	0.0030	0.0	0.000	62.03	2.70	59.5	16077.	5954.5	160.8	0.	0.000	0.500	0.000
15	11.60	11.50	0.0030	0.0	0.000	62.03	2.70	59.5	16077.	5954.5	160.8	0.	0.000	0.500	0.000
TOT						930.39			241158.	89317.6					
AVG					0.000		2.70	59.5			160.8				
CUM						930.39									

********** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********

ELEM NO.	ENDING DIST	SAT D.O. MG/L	REAER RATE 1/DA	CBOD DECAY 1/DA	CBOD SETT 1/DA	ANBOD DECAY 1/DA	FULL SOD *	CORR SOD *	ORGN DECAY 1/DA	ORGN SETT 1/DA	NH3 DECAY 1/DA	NH3 SRCE *	DENIT RATE 1/DA	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/DA	NCM DECAY 1/DA	NCM SETT 1/DA
1	12.900	7.38	0.29	0.08	0.00	0.00	1.67	1.67	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
2	12.800	7.38	0.29	0.08	0.00	0.00	1.66	1.66	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
3	12.700	7.38	0.29	0.08	0.00	0.00	1.66	1.66	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
4	12.600	7.38	0.29	0.08	0.00	0.00	1.66	1.66	0.01	0.00	0.10	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
5	12.500	7.38	0.29	0.08	0.00	0.00	1.66	1.66	0.01	0.00	0.10	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
6	12.400	7.38	0.29	0.08	0.00	0.00	1.66	1.66	0.01	0.00	0.10	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
7	12.300	7.38	0.29	0.08	0.00	0.00	1.66	1.66	0.01	0.00	0.10	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
8	12.200	7.38	0.29	0.08	0.00	0.00	1.65	1.65	0.01	0.00	0.10	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
9	12.100	7.38	0.29	0.08	0.00	0.00	1.65	1.65	0.01	0.00	0.10	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
10	12.000	7.38	0.29	0.08	0.00	0.00	1.65	1.65	0.01	0.00	0.10	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
11	11.900	7.38	0.29	0.08	0.00	0.00	1.65	1.65	0.01	0.00	0.10	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
12	11.800	7.38	0.29	0.08	0.00	0.00	1.65	1.65	0.01	0.00	0.10	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
13	11.700	7.38	0.29	0.08	0.00	0.00	1.65	1.65	0.01	0.00	0.10	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
14	11.600	7.38	0.29	0.08	0.00	0.00	1.65	1.65	0.01	0.00	0.10	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
15	11.500	7.38	0.29	0.08	0.00	0.00	1.65	1.65	0.01	0.00	0.10	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00
20 DEG C RATE				0.05		0.00		0.64	0.01		0.05	0.00	0.00	0.00			0.00	0.00	
AVG 20 DEG C RATE			0.24		0.00					0.00									0.00

* G/SQ M/D ** MG/L/DAY

********** WATER QUALITY CONSTITUENT VALUES **********

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I *	CM-II *	DO MG/L	BOD MG/L	EBOD MG/L	ORGN MG/L	NH3 MG/L	NO3+2 MG/L	TOTN MG/L	PHOS MG/L	CHL A UG/L	MACRO **	COLI #/100ML	NCM *
1	12.900	31.20	0.7	1603.8	0.0	5.17	1.30	1.30	0.52	0.13	1.59	2.24	0.05	7.1	0.0	0.	0.00
2	12.800	31.20	0.7	1605.1	0.0	5.17	1.29	1.29	0.52	0.13	1.59	2.25	0.05	7.1	0.0	0.	0.00
3	12.700	31.20	0.7	1606.4	0.0	5.18	1.28	1.28	0.52	0.13	1.60	2.25	0.05	7.0	0.0	0.	0.00
4	12.600	31.20	0.7	1607.8	0.0	5.18	1.28	1.28	0.52	0.13	1.61	2.26	0.05	7.0	0.0	0.	0.00
5	12.500	31.20	0.7	1609.1	0.0	5.18	1.28	1.28	0.53	0.13	1.61	2.27	0.05	7.0	0.0	0.	0.00
6	12.400	31.20	0.7	1610.4	0.0	5.18	1.28	1.28	0.53	0.13	1.62	2.28	0.04	6.9	0.0	0.	0.00
7	12.300	31.20	0.7	1611.8	0.0	5.18	1.28	1.28	0.53	0.13	1.63	2.29	0.04	6.9	0.0	0.	0.00
8	12.200	31.20	0.7	1613.1	0.0	5.17	1.28	1.28	0.54	0.13	1.63	2.30	0.04	6.9	0.0	0.	0.00
9	12.100	31.20	0.7	1614.5	0.0	5.17	1.28	1.28	0.55	0.13	1.64	2.32	0.04	6.8	0.0	0.	0.00
10	12.000	31.20	0.7	1615.8	0.0	5.17	1.29	1.29	0.55	0.13	1.65	2.33	0.04	6.8	0.0	0.	0.00
11	11.900	31.20	0.7	1617.2	0.0	5.16	1.30	1.30	0.56	0.13	1.66	2.35	0.04	6.8	0.0	0.	0.00
12	11.800	31.20	0.7	1618.6	0.0	5.16	1.31	1.31	0.57	0.13	1.66	2.37	0.04	6.8	0.0	0.	0.00
13	11.700	31.20	0.7	1620.0	0.0	5.15	1.32	1.32	0.58	0.14	1.67	2.39	0.04	6.8	0.0	0.	0.00
14	11.600	31.20	0.7	1621.3	0.0	5.14	1.33	1.33	0.60	0.14	1.68	2.41	0.04	6.8	0.0	0.	0.00
15	11.500	31.20	0.7	1622.7	0.0	5.14	1.35	1.35	0.61	0.14	1.68	2.44	0.04	6.8	0.0	0.	0.00

* CM-I = cond umhos CM-II = NCM =

** G/CU M

********** ALGAE AND MACROPHYTE DATA **********

ELEM NO.	ENDING DIST	SECCHI DEPTH M	NITR PREF	ALG SETT 1/DA	ALG LIT LIM	ALG N LIM	ALG P LIM	ALG N&P LIM	ALG TOT LIM	ALG GROW 1/DA	ALG RESP 1/DA	A P/R RATIO	MAC LIT LIM	MAC N LIM	MAC P LIM	MAC N&P LIM	MAC TOT LIM	MAC GROW 1/DA	MAC RESP 1/DA	M P/R RATIO
1	12.900	0.87	0.92	0.24	.25	.90	.61	.73	.18	0.41	0.17	1.97	.00	.00	.00	.00	.00	0.00	0.00	0.00
2	12.800	0.87	0.92	0.24	.25	.90	.61	.72	.18	0.41	0.17	1.97	.00	.00	.00	.00	.00	0.00	0.00	0.00
3	12.700	0.87	0.93	0.24	.25	.90	.61	.72	.18	0.41	0.17	1.97	.00	.00	.00	.00	.00	0.00	0.00	0.00
4	12.600	0.87	0.93	0.24	.25	.90	.60	.72	.18	0.41	0.17	1.96	.00	.00	.00	.00	.00	0.00	0.00	0.00
5	12.500	0.87	0.93	0.24	.25	.90	.60	.72	.18	0.41	0.17	1.96	.00	.00	.00	.00	.00	0.00	0.00	0.00
6	12.400	0.87	0.93	0.24	.25	.90	.60	.72	.18	0.41	0.17	1.95	.00	.00	.00	.00	.00	0.00	0.00	0.00
7	12.300	0.87	0.93	0.24	.25	.90	.60	.72	.18	0.41	0.17	1.95	.00	.00	.00	.00	.00	0.00	0.00	0.00
8	12.200	0.87	0.93	0.24	.25	.90	.59	.72	.18	0.41	0.17	1.95	.00	.00	.00	.00	.00	0.00	0.00	0.00
9	12.100	0.87	0.93	0.24	.25	.90	.59	.71	.18	0.41	0.17	1.94	.00	.00	.00	.00	.00	0.00	0.00	0.00
10	12.000	0.87	0.93	0.24	.25	.90	.59	.71	.18	0.41	0.17	1.94	.00	.00	.00	.00	.00	0.00	0.00	0.00
11	11.900	0.87	0.93	0.24	.25	.90	.59	.71	.18	0.40	0.17	1.94	.00	.00	.00	.00	.00	0.00	0.00	0.00
12	11.800	0.87	0.93	0.24	.25	.90	.59	.71	.18	0.40	0.17	1.93	.00	.00	.00	.00	.00	0.00	0.00	0.00
13	11.700	0.87	0.93	0.24	.25	.90	.58	.71	.18	0.40	0.17	1.93	.00	.00	.00	.00	.00	0.00	0.00	0.00
14	11.600	0.87	0.92	0.24	.25	.90	.58	.71	.18	0.40	0.17	1.92	.00	.00	.00	.00	.00	0.00	0.00	0.00
15	11.500	0.87	0.92	0.24	.25	.90	.58	.71	.18	0.40	0.17	1.92	.00	.00	.00	.00	.00	0.00	0.00	0.00
20 DEG C RATE				0.50						1.35	0.10							0.00	0.00	

NOTE ON NITR PREF: 1.0=NO3 ; 0.0=NH3

1

FINAL REPORT Bayou Verret
REACH NO. 2 Bayou Verret #2

QUAL-TX projection for Lake Cataouatche, LA
60% reduction in Bayou

********** REACH INPUTS **********

ELEM NO.	TYPE	FLOW CMS	TEMP DEG C	SALN PPT	CM-I *	CM-II *	DO MG/L	BOD MG/L	EBOD MG/L	ORGN MG/L	NH3 MG/L	NO3+2 MG/L	PHOS MG/L	CHL A UG/L	COLI #/100ML	NCM *
16	UPR RCH	0.0030	31.20	0.69	1622.7	0.0	5.14	1.35	1.35	0.61	0.14	1.68	0.04	6.8	0.	0.00

********** HYDRAULIC PARAMETER VALUES **********

ELEM NO.	BEGIN DIST KM	ENDING DIST KM	FLOW CMS	PCT EFF	ADVCTV VELO M/S	TRAVEL TIME DAYS	DEPTH M	WIDTH M	VOLUME CU M	SURFACE AREA SQ M	X-SECT AREA SQ M	TIDAL PRISM CU M	TIDAL VELO M/S	DISPRSN SQ M/S	MEAN VELO M/S
16	11.50	11.40	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
17	11.40	11.30	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
18	11.30	11.20	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
19	11.20	11.10	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
20	11.10	11.00	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
21	11.00	10.90	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
22	10.90	10.80	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
23	10.80	10.70	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
24	10.70	10.60	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
25	10.60	10.50	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
26	10.50	10.40	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
27	10.40	10.30	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
28	10.30	10.20	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
29	10.20	10.10	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
30	10.10	10.00	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
31	10.00	9.90	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
32	9.90	9.80	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
33	9.80	9.70	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
34	9.70	9.60	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
35	9.60	9.50	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
36	9.50	9.40	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
37	9.40	9.30	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
38	9.30	9.20	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
39	9.20	9.10	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
40	9.10	9.00	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
41	9.00	8.90	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
42	8.90	8.80	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
43	8.80	8.70	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
44	8.70	8.60	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
45	8.60	8.50	0.0030	0.0	0.000	67.33	2.40	72.7	17452.	7271.7	174.5	0.	0.000	0.500	0.000
TOT						2019.91			523560.	218150.1					
AVG					0.000		2.40	72.7			174.5				
CUM						2950.30									

********** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********

ELEM NO.	ENDING DIST	SAT D.O. MG/L	REAER RATE 1/DA	CBOD DECAY 1/DA	CBOD SETT 1/DA	ANBOD DECAY 1/DA	FULL SOD *	CORR SOD *	ORGN DECAY 1/DA	ORGN SETT 1/DA	NH3 DECAY 1/DA	NH3 SRCE *	DENIT RATE 1/DA	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/DA	NCM DECAY 1/DA	NCM SETT 1/DA
16	11.400	7.38	0.34	0.08	0.00	0.00	1.81	1.81	0.01	0.00	0.10	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
17	11.300	7.38	0.34	0.08	0.00	0.00	1.81	1.81	0.01	0.00	0.10	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
18	11.200	7.38	0.34	0.08	0.00	0.00	1.81	1.81	0.01	0.00	0.10	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
19	11.100	7.38	0.34	0.08	0.00	0.00	1.81	1.81	0.01	0.00	0.10	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
20	11.000	7.38	0.34	0.08	0.00	0.00	1.81	1.81	0.01	0.00	0.10	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
21	10.900	7.38	0.34	0.08	0.00	0.00	1.81	1.81	0.01	0.00	0.10	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
22	10.800	7.38	0.34	0.08	0.00	0.00	1.81	1.81	0.01	0.00	0.10	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
23	10.700	7.38	0.34	0.08	0.00	0.00	1.81	1.81	0.01	0.00	0.10	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
24	10.600	7.38	0.34	0.08	0.00	0.00	1.81	1.81	0.01	0.00	0.10	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
25	10.500	7.38	0.34	0.08	0.00	0.00	1.81	1.81	0.01	0.00	0.10	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
26	10.400	7.38	0.34	0.08	0.00	0.00	1.81	1.81	0.01	0.00	0.10	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
27	10.300	7.38	0.34	0.08	0.00	0.00	1.81	1.81	0.01	0.00	0.10	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
28	10.200	7.38	0.34	0.08	0.00	0.00	1.80	1.80	0.01	0.00	0.10	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
29	10.100	7.38	0.34	0.08	0.00	0.00	1.80	1.80	0.01	0.00	0.10	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
30	10.000	7.38	0.34	0.08	0.00	0.00	1.80	1.80	0.01	0.00	0.10	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
31	9.900	7.38	0.34	0.08	0.00	0.00	1.80	1.80	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
32	9.800	7.38	0.34	0.08	0.00	0.00	1.80	1.80	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
33	9.700	7.38	0.34	0.08	0.00	0.00	1.80	1.80	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
34	9.600	7.38	0.34	0.08	0.00	0.00	1.80	1.80	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
35	9.500	7.38	0.34	0.08	0.00	0.00	1.80	1.80	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
36	9.400	7.38	0.34	0.08	0.00	0.00	1.79	1.79	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
37	9.300	7.38	0.34	0.08	0.00	0.00	1.79	1.79	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
38	9.200	7.38	0.34	0.08	0.00	0.00	1.79	1.79	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
39	9.100	7.38	0.34	0.08	0.00	0.00	1.79	1.79	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
40	9.000	7.38	0.34	0.08	0.00	0.00	1.79	1.79	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
41	8.900	7.38	0.34	0.08	0.00	0.00	1.79	1.79	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
42	8.800	7.38	0.34	0.08	0.00	0.00	1.79	1.79	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
43	8.700	7.38	0.34	0.08	0.00	0.00	1.79	1.79	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
44	8.600	7.38	0.34	0.08	0.00	0.00	1.79	1.79	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
45	8.500	7.38	0.34	0.08	0.00	0.00	1.79	1.79	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
20 DEG C RATE				0.05		0.00		0.72	0.01		0.05	0.00	0.00	0.00			0.00	0.00	
AVG 20 DEG C RATE			0.28		0.00					0.00									0.00

* G/SQ M/D ** MG/L/DAY

********** WATER QUALITY CONSTITUENT VALUES **********

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I *	CM-II *	DO MG/L	BOD MG/L	EBOD MG/L	ORGN MG/L	NH3 MG/L	NO3+2 MG/L	TOTN MG/L	PHOS MG/L	CHL A UG/L	MACRO **	COLI #/100ML	NCM *
16	11.400	31.20	0.7	1624.1	0.0	5.13	1.37	1.37	0.63	0.14	1.69	2.46	0.04	6.8	0.0	0.	0.00
17	11.300	31.20	0.7	1625.3	0.0	5.12	1.39	1.39	0.64	0.14	1.70	2.48	0.04	6.8	0.0	0.	0.00
18	11.200	31.20	0.7	1626.6	0.0	5.11	1.40	1.40	0.65	0.14	1.70	2.50	0.04	6.8	0.0	0.	0.00
19	11.100	31.20	0.7	1627.9	0.0	5.11	1.42	1.42	0.67	0.14	1.71	2.52	0.04	6.8	0.0	0.	0.00
20	11.000	31.20	0.7	1629.2	0.0	5.10	1.43	1.43	0.68	0.14	1.72	2.54	0.04	6.8	0.0	0.	0.00
21	10.900	31.20	0.7	1630.5	0.0	5.10	1.44	1.44	0.69	0.15	1.72	2.56	0.04	6.8	0.0	0.	0.00
22	10.800	31.20	0.7	1631.8	0.0	5.09	1.44	1.44	0.70	0.15	1.73	2.58	0.04	6.8	0.0	0.	0.00
23	10.700	31.20	0.7	1633.1	0.0	5.09	1.45	1.45	0.71	0.15	1.74	2.60	0.04	6.7	0.0	0.	0.00
24	10.600	31.20	0.7	1634.5	0.0	5.08	1.46	1.46	0.72	0.15	1.74	2.62	0.04	6.7	0.0	0.	0.00
25	10.500	31.20	0.7	1635.8	0.0	5.08	1.46	1.46	0.73	0.15	1.75	2.63	0.04	6.7	0.0	0.	0.00
26	10.400	31.20	0.7	1637.1	0.0	5.08	1.46	1.46	0.74	0.15	1.76	2.65	0.04	6.7	0.0	0.	0.00
27	10.300	31.20	0.7	1638.4	0.0	5.08	1.47	1.47	0.75	0.15	1.76	2.66	0.04	6.7	0.0	0.	0.00
28	10.200	31.20	0.7	1639.8	0.0	5.07	1.47	1.47	0.76	0.15	1.77	2.68	0.04	6.6	0.0	0.	0.00
29	10.100	31.20	0.7	1641.1	0.0	5.07	1.47	1.47	0.77	0.15	1.77	2.69	0.04	6.6	0.0	0.	0.00
30	10.000	31.20	0.7	1642.5	0.0	5.07	1.47	1.47	0.77	0.16	1.78	2.71	0.04	6.6	0.0	0.	0.00
31	9.900	31.20	0.7	1643.8	0.0	5.07	1.47	1.47	0.78	0.16	1.78	2.72	0.04	6.6	0.0	0.	0.00
32	9.800	31.20	0.7	1645.2	0.0	5.07	1.47	1.47	0.79	0.16	1.79	2.73	0.04	6.5	0.0	0.	0.00
33	9.700	31.20	0.7	1646.5	0.0	5.07	1.47	1.47	0.80	0.16	1.79	2.74	0.04	6.5	0.0	0.	0.00
34	9.600	31.20	0.7	1647.9	0.0	5.07	1.47	1.47	0.80	0.16	1.79	2.75	0.04	6.5	0.0	0.	0.00
35	9.500	31.20	0.7	1649.3	0.0	5.07	1.46	1.46	0.81	0.16	1.80	2.76	0.04	6.5	0.0	0.	0.00
36	9.400	31.20	0.7	1650.6	0.0	5.07	1.46	1.46	0.82	0.16	1.80	2.77	0.04	6.5	0.0	0.	0.00
37	9.300	31.20	0.7	1652.0	0.0	5.07	1.45	1.45	0.82	0.16	1.80	2.78	0.04	6.4	0.0	0.	0.00
38	9.200	31.20	0.7	1653.4	0.0	5.07	1.45	1.45	0.83	0.16	1.80	2.79	0.04	6.4	0.0	0.	0.00
39	9.100	31.20	0.7	1654.8	0.0	5.07	1.44	1.44	0.83	0.16	1.80	2.80	0.04	6.4	0.0	0.	0.00
40	9.000	31.20	0.7	1656.2	0.0	5.07	1.43	1.43	0.84	0.16	1.80	2.80	0.04	6.4	0.0	0.	0.00
41	8.900	31.20	0.7	1657.6	0.0	5.07	1.42	1.42	0.84	0.16	1.80	2.81	0.04	6.4	0.0	0.	0.00
42	8.800	31.20	0.7	1659.0	0.0	5.08	1.41	1.41	0.85	0.16	1.80	2.81	0.04	6.4	0.0	0.	0.00
43	8.700	31.20	0.7	1660.4	0.0	5.08	1.40	1.40	0.86	0.16	1.80	2.82	0.04	6.4	0.0	0.	0.00
44	8.600	31.20	0.7	1661.8	0.0	5.08	1.38	1.38	0.86	0.16	1.80	2.82	0.04	6.3	0.0	0.	0.00
45	8.500	31.20	0.7	1663.2	0.0	5.09	1.36	1.36	0.87	0.16	1.79	2.82	0.04	6.3	0.0	0.	0.00

* CM-I = cond umhos

CM-II =

NCM =

** G/CU M

********** ALGAE AND MACROPHYTE DATA **********

ELEM NO.	ENDING DIST	SECCHI DEPTH M	NITR PREF	ALG SETT 1/DA	ALG LIT LIM	ALG N LIM	ALG P LIM	ALG N&P LIM	ALG TOT LIM	ALG GROW 1/DA	ALG RESP 1/DA	A P/R RATIO	MAC LIT LIM	MAC N LIM	MAC P LIM	MAC N&P LIM	MAC TOT LIM	MAC GROW 1/DA	MAC RESP 1/DA	M P/R RATIO
16	11.400	0.87	0.92	0.27	.28	.90	.58	.70	.20	0.44	0.17	2.13	.00	.00	.00	.00	.00	0.00	0.00	0.00
17	11.300	0.87	0.92	0.27	.28	.90	.58	.70	.20	0.44	0.17	2.12	.00	.00	.00	.00	.00	0.00	0.00	0.00
18	11.200	0.87	0.92	0.27	.28	.90	.57	.70	.20	0.44	0.17	2.12	.00	.00	.00	.00	.00	0.00	0.00	0.00
19	11.100	0.87	0.92	0.27	.28	.90	.57	.70	.20	0.44	0.17	2.11	.00	.00	.00	.00	.00	0.00	0.00	0.00
20	11.000	0.87	0.92	0.27	.28	.90	.57	.70	.20	0.44	0.17	2.11	.00	.00	.00	.00	.00	0.00	0.00	0.00
21	10.900	0.87	0.92	0.27	.28	.90	.57	.70	.20	0.44	0.17	2.11	.00	.00	.00	.00	.00	0.00	0.00	0.00
22	10.800	0.87	0.92	0.27	.28	.90	.57	.70	.20	0.44	0.17	2.11	.00	.00	.00	.00	.00	0.00	0.00	0.00
23	10.700	0.87	0.92	0.27	.28	.90	.57	.70	.20	0.44	0.17	2.11	.00	.00	.00	.00	.00	0.00	0.00	0.00
24	10.600	0.87	0.92	0.27	.28	.90	.57	.70	.20	0.44	0.17	2.10	.00	.00	.00	.00	.00	0.00	0.00	0.00
25	10.500	0.87	0.92	0.27	.28	.90	.57	.70	.20	0.44	0.17	2.10	.00	.00	.00	.00	.00	0.00	0.00	0.00
26	10.400	0.87	0.92	0.27	.28	.91	.56	.70	.20	0.44	0.17	2.10	.00	.00	.00	.00	.00	0.00	0.00	0.00
27	10.300	0.87	0.92	0.27	.28	.91	.56	.69	.20	0.44	0.17	2.10	.00	.00	.00	.00	.00	0.00	0.00	0.00
28	10.200	0.87	0.92	0.27	.28	.91	.56	.69	.20	0.44	0.17	2.10	.00	.00	.00	.00	.00	0.00	0.00	0.00
29	10.100	0.87	0.92	0.27	.28	.91	.56	.69	.20	0.44	0.17	2.10	.00	.00	.00	.00	.00	0.00	0.00	0.00
30	10.000	0.87	0.92	0.27	.28	.91	.56	.69	.20	0.44	0.17	2.10	.00	.00	.00	.00	.00	0.00	0.00	0.00
31	9.900	0.87	0.92	0.27	.28	.91	.56	.69	.20	0.44	0.17	2.10	.00	.00	.00	.00	.00	0.00	0.00	0.00
32	9.800	0.87	0.92	0.27	.28	.91	.56	.69	.20	0.44	0.17	2.10	.00	.00	.00	.00	.00	0.00	0.00	0.00
33	9.700	0.87	0.92	0.27	.28	.91	.56	.69	.20	0.44	0.17	2.10	.00	.00	.00	.00	.00	0.00	0.00	0.00
34	9.600	0.87	0.92	0.27	.28	.91	.56	.69	.20	0.44	0.17	2.10	.00	.00	.00	.00	.00	0.00	0.00	0.00
35	9.500	0.87	0.92	0.27	.28	.91	.56	.69	.20	0.44	0.17	2.10	.00	.00	.00	.00	.00	0.00	0.00	0.00
36	9.400	0.87	0.92	0.27	.28	.91	.56	.69	.20	0.44	0.17	2.10	.00	.00	.00	.00	.00	0.00	0.00	0.00
37	9.300	0.87	0.92	0.27	.28	.91	.56	.69	.20	0.44	0.17	2.10	.00	.00	.00	.00	.00	0.00	0.00	0.00
38	9.200	0.87	0.92	0.27	.28	.91	.56	.69	.20	0.44	0.17	2.09	.00	.00	.00	.00	.00	0.00	0.00	0.00
39	9.100	0.88	0.92	0.27	.28	.91	.56	.69	.20	0.44	0.17	2.09	.00	.00	.00	.00	.00	0.00	0.00	0.00
40	9.000	0.88	0.92	0.27	.28	.91	.55	.69	.20	0.44	0.17	2.09	.00	.00	.00	.00	.00	0.00	0.00	0.00
41	8.900	0.88	0.92	0.27	.28	.91	.55	.69	.20	0.44	0.17	2.09	.00	.00	.00	.00	.00	0.00	0.00	0.00
42	8.800	0.88	0.92	0.27	.28	.91	.55	.69	.19	0.44	0.17	2.09	.00	.00	.00	.00	.00	0.00	0.00	0.00
43	8.700	0.88	0.92	0.27	.28	.91	.55	.69	.19	0.44	0.17	2.09	.00	.00	.00	.00	.00	0.00	0.00	0.00
44	8.600	0.88	0.92	0.27	.28	.91	.55	.69	.19	0.44	0.17	2.09	.00	.00	.00	.00	.00	0.00	0.00	0.00
45	8.500	0.88	0.92	0.27	.28	.91	.55	.69	.19	0.44	0.17	2.08	.00	.00	.00	.00	.00	0.00	0.00	0.00
20 DEG C RATE				0.50						1.35	0.10							0.00	0.00	

NOTE ON NITR PREF: 1.0=NO3 ; 0.0=NH3

1

FINAL REPORT Bayou Verret
REACH NO. 3 Bayou Verret #3

QUAL-TX projection for Lake Cataouatche, LA
60% reduction in Bayou

********** REACH INPUTS **********

ELEM NO.	TYPE	FLOW CMS	TEMP DEG C	SALN PPT	CM-I *	CM-II *	DO MG/L	BOD MG/L	EBOD MG/L	ORGN MG/L	NH3 MG/L	NO3+2 MG/L	PHOS MG/L	CHL A UG/L	COLI #/100ML	NCM *
46	UPR RCH	0.0030	31.20	0.67	1663.2	0.0	5.09	1.36	1.36	0.87	0.16	1.79	0.04	6.3	0.	0.00

********** HYDRAULIC PARAMETER VALUES **********

ELEM NO.	BEGIN DIST KM	ENDING DIST KM	FLOW CMS	PCT EFF	ADVCTV VELO M/S	TRAVEL TIME DAYS	DEPTH M	WIDTH M	VOLUME CU M	SURFACE AREA SQ M	X-SECT AREA SQ M	TIDAL PRISM CU M	TIDAL VELO M/S	DISPRSN SQ M/S	MEAN VELO M/S
46	8.50	8.40	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
47	8.40	8.30	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
48	8.30	8.20	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
49	8.20	8.10	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
50	8.10	8.00	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
51	8.00	7.90	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
52	7.90	7.80	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
53	7.80	7.70	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
54	7.70	7.60	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
55	7.60	7.50	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
56	7.50	7.40	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
57	7.40	7.30	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
58	7.30	7.20	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
59	7.20	7.10	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
60	7.10	7.00	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
61	7.00	6.90	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
62	6.90	6.80	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
63	6.80	6.70	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
64	6.70	6.60	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
65	6.60	6.50	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
66	6.50	6.40	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
67	6.40	6.30	0.0030	0.0	0.000	71.58	2.10	88.3	18553.	8834.7	185.5	0.	0.000	0.500	0.000
TOT						1574.70			408163.	194363.5					
AVG					0.000		2.10	88.3			185.5				
CUM						4525.01									

********** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********

ELEM NO.	ENDING DIST	SAT D.O. MG/L	REAER RATE 1/DA	CBOD DECAY 1/DA	CBOD SETT 1/DA	ANBOD DECAY 1/DA	FULL SOD *	CORR SOD *	ORGN DECAY 1/DA	ORGN SETT 1/DA	NH3 DECAY 1/DA	NH3 SRCE *	DENIT RATE 1/DA	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/DA	NCM DECAY 1/DA	NCM SETT 1/DA
46	8.400	7.38	0.38	0.08	0.00	0.00	1.79	1.79	0.01	0.00	0.10	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00
47	8.300	7.38	0.38	0.08	0.00	0.00	1.79	1.79	0.01	0.00	0.10	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00
48	8.200	7.38	0.38	0.08	0.00	0.00	1.79	1.79	0.01	0.00	0.10	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00
49	8.100	7.38	0.38	0.08	0.00	0.00	1.79	1.79	0.01	0.00	0.10	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00
50	8.000	7.38	0.38	0.08	0.00	0.00	1.79	1.79	0.01	0.00	0.10	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00
51	7.900	7.38	0.38	0.08	0.00	0.00	1.78	1.78	0.01	0.00	0.10	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00
52	7.800	7.38	0.38	0.08	0.00	0.00	1.78	1.78	0.01	0.00	0.10	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00
53	7.700	7.38	0.38	0.08	0.00	0.00	1.78	1.78	0.01	0.00	0.10	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00
54	7.600	7.38	0.38	0.08	0.00	0.00	1.77	1.77	0.01	0.00	0.10	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00
55	7.500	7.38	0.38	0.08	0.00	0.00	1.77	1.77	0.01	0.00	0.10	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00
56	7.400	7.38	0.38	0.08	0.00	0.00	1.77	1.77	0.01	0.00	0.10	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00
57	7.300	7.38	0.38	0.08	0.00	0.00	1.76	1.76	0.01	0.00	0.10	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
58	7.200	7.38	0.38	0.08	0.00	0.00	1.76	1.76	0.01	0.00	0.10	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
59	7.100	7.38	0.38	0.08	0.00	0.00	1.76	1.76	0.01	0.00	0.10	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
60	7.000	7.38	0.38	0.08	0.00	0.00	1.75	1.75	0.01	0.00	0.10	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
61	6.900	7.38	0.38	0.08	0.00	0.00	1.75	1.75	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
62	6.800	7.38	0.38	0.08	0.00	0.00	1.74	1.74	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
63	6.700	7.38	0.38	0.08	0.00	0.00	1.74	1.74	0.01	0.00	0.10	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
64	6.600	7.38	0.38	0.08	0.00	0.00	1.73	1.73	0.01	0.00	0.10	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
65	6.500	7.38	0.38	0.08	0.00	0.00	1.73	1.73	0.01	0.00	0.10	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
66	6.400	7.38	0.38	0.08	0.00	0.00	1.73	1.73	0.01	0.00	0.10	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
67	6.300	7.38	0.38	0.08	0.00	0.00	1.72	1.72	0.01	0.00	0.10	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
20 DEG C RATE				0.05		0.00		0.72	0.01		0.05	0.00	0.00	0.00			0.00	0.00	
AVG 20 DEG C RATE			0.31		0.00					0.00									0.00

* G/SQ M/D ** MG/L/DAY

********** WATER QUALITY CONSTITUENT VALUES **********

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I *	CM-II *	DO MG/L	BOD MG/L	EBOD MG/L	ORGN MG/L	NH3 MG/L	NO3+2 MG/L	TOTN MG/L	PHOS MG/L	CHL A UG/L	MACRO **	COLI #/100ML	NCM *
46	8.400	31.20	0.7	1664.6	0.0	5.09	1.34	1.34	0.87	0.16	1.79	2.82	0.04	6.4	0.0	0.	0.00
47	8.300	31.20	0.7	1665.9	0.0	5.10	1.33	1.33	0.88	0.16	1.78	2.82	0.04	6.3	0.0	0.	0.00
48	8.200	31.20	0.6	1667.3	0.0	5.10	1.32	1.32	0.88	0.16	1.78	2.82	0.04	6.3	0.0	0.	0.00
49	8.100	31.20	0.6	1668.6	0.0	5.10	1.31	1.31	0.89	0.16	1.77	2.83	0.04	6.3	0.0	0.	0.00
50	8.000	31.20	0.6	1670.0	0.0	5.10	1.31	1.31	0.90	0.16	1.77	2.83	0.04	6.3	0.0	0.	0.00
51	7.900	31.20	0.6	1671.3	0.0	5.10	1.32	1.32	0.90	0.16	1.76	2.83	0.04	6.2	0.0	0.	0.00
52	7.800	31.20	0.6	1672.7	0.0	5.10	1.33	1.33	0.91	0.16	1.76	2.83	0.04	6.2	0.0	0.	0.00
53	7.700	31.20	0.6	1674.1	0.0	5.10	1.35	1.35	0.92	0.16	1.75	2.83	0.04	6.1	0.0	0.	0.00
54	7.600	31.20	0.6	1675.4	0.0	5.11	1.37	1.37	0.93	0.16	1.74	2.83	0.04	6.1	0.0	0.	0.00
55	7.500	31.20	0.6	1676.8	0.0	5.11	1.40	1.40	0.94	0.16	1.73	2.83	0.04	6.0	0.0	0.	0.00
56	7.400	31.20	0.6	1678.2	0.0	5.11	1.43	1.43	0.95	0.16	1.72	2.84	0.03	5.9	0.0	0.	0.00
57	7.300	31.20	0.6	1679.6	0.0	5.12	1.48	1.48	0.96	0.16	1.71	2.84	0.03	5.9	0.0	0.	0.00
58	7.200	31.20	0.6	1681.0	0.0	5.13	1.53	1.53	0.97	0.16	1.70	2.84	0.03	5.8	0.0	0.	0.00
59	7.100	31.20	0.6	1682.4	0.0	5.15	1.59	1.59	0.99	0.16	1.69	2.84	0.03	5.7	0.0	0.	0.00
60	7.000	31.20	0.6	1683.8	0.0	5.18	1.66	1.66	1.00	0.16	1.68	2.84	0.03	5.6	0.0	0.	0.00
61	6.900	31.20	0.6	1685.2	0.0	5.22	1.74	1.74	1.01	0.16	1.67	2.84	0.03	5.5	0.0	0.	0.00
62	6.800	31.20	0.6	1686.6	0.0	5.28	1.83	1.83	1.03	0.16	1.65	2.84	0.03	5.5	0.0	0.	0.00
63	6.700	31.20	0.5	1688.0	0.0	5.36	1.95	1.95	1.05	0.15	1.64	2.84	0.03	5.4	0.0	0.	0.00
64	6.600	31.20	0.5	1689.4	0.0	5.48	2.07	2.07	1.06	0.15	1.63	2.84	0.03	5.3	0.0	0.	0.00
65	6.500	31.20	0.5	1690.8	0.0	5.65	2.22	2.22	1.08	0.15	1.61	2.84	0.03	5.2	0.0	0.	0.00
66	6.400	31.20	0.5	1692.2	0.0	5.88	2.40	2.40	1.10	0.14	1.59	2.84	0.03	5.1	0.0	0.	0.00
67	6.300	31.20	0.5	1693.7	0.0	6.20	2.59	2.59	1.12	0.14	1.58	2.84	0.03	5.1	0.0	0.	0.00

* CM-I = cond
umhos

CM-II =

NCM =

** G/CU M

********** ALGAE AND MACROPHYTE DATA **********

ELEM NO.	ENDING DIST	SECCHI DEPTH M	NITR PREF	ALG SETT 1/DA	ALG LIT LIM	ALG N LIM	ALG P LIM	ALG N&P LIM	ALG TOT LIM	ALG GROW 1/DA	ALG RESP 1/DA	A P/R RATIO	MAC LIT LIM	MAC N LIM	MAC P LIM	MAC N&P LIM	MAC TOT LIM	MAC GROW 1/DA	MAC RESP 1/DA	M P/R RATIO
46	8.400	0.88	0.92	0.31	.32	.91	.55	.68	.22	0.48	0.17	2.32	.00	.00	.00	.00	.00	0.00	0.00	0.00
47	8.300	0.88	0.92	0.31	.32	.91	.55	.68	.22	0.48	0.17	2.32	.00	.00	.00	.00	.00	0.00	0.00	0.00
48	8.200	0.88	0.92	0.31	.32	.91	.55	.68	.22	0.48	0.17	2.31	.00	.00	.00	.00	.00	0.00	0.00	0.00
49	8.100	0.88	0.92	0.31	.32	.91	.55	.68	.22	0.48	0.17	2.31	.00	.00	.00	.00	.00	0.00	0.00	0.00
50	8.000	0.88	0.92	0.31	.32	.91	.55	.68	.22	0.48	0.17	2.31	.00	.00	.00	.00	.00	0.00	0.00	0.00
51	7.900	0.88	0.91	0.31	.32	.91	.54	.68	.22	0.48	0.17	2.31	.00	.00	.00	.00	.00	0.00	0.00	0.00
52	7.800	0.88	0.91	0.31	.32	.91	.54	.68	.21	0.48	0.17	2.31	.00	.00	.00	.00	.00	0.00	0.00	0.00
53	7.700	0.88	0.91	0.31	.32	.91	.54	.68	.21	0.48	0.17	2.30	.00	.00	.00	.00	.00	0.00	0.00	0.00
54	7.600	0.88	0.91	0.31	.32	.90	.54	.68	.21	0.48	0.17	2.30	.00	.00	.00	.00	.00	0.00	0.00	0.00
55	7.500	0.88	0.91	0.31	.32	.90	.54	.68	.21	0.48	0.17	2.30	.00	.00	.00	.00	.00	0.00	0.00	0.00
56	7.400	0.88	0.91	0.31	.32	.90	.54	.67	.21	0.48	0.17	2.30	.00	.00	.00	.00	.00	0.00	0.00	0.00
57	7.300	0.88	0.91	0.31	.32	.90	.54	.67	.21	0.48	0.17	2.30	.00	.00	.00	.00	.00	0.00	0.00	0.00
58	7.200	0.88	0.91	0.31	.32	.90	.53	.67	.21	0.48	0.17	2.30	.00	.00	.00	.00	.00	0.00	0.00	0.00
59	7.100	0.88	0.91	0.31	.32	.90	.53	.67	.21	0.48	0.17	2.29	.00	.00	.00	.00	.00	0.00	0.00	0.00
60	7.000	0.89	0.91	0.31	.32	.90	.53	.67	.21	0.48	0.17	2.29	.00	.00	.00	.00	.00	0.00	0.00	0.00
61	6.900	0.89	0.91	0.31	.32	.90	.53	.66	.21	0.48	0.17	2.29	.00	.00	.00	.00	.00	0.00	0.00	0.00
62	6.800	0.89	0.91	0.31	.32	.90	.52	.66	.21	0.48	0.17	2.28	.00	.00	.00	.00	.00	0.00	0.00	0.00
63	6.700	0.89	0.91	0.31	.32	.90	.52	.66	.21	0.48	0.17	2.27	.00	.00	.00	.00	.00	0.00	0.00	0.00
64	6.600	0.89	0.92	0.31	.32	.90	.51	.65	.21	0.47	0.17	2.27	.00	.00	.00	.00	.00	0.00	0.00	0.00
65	6.500	0.89	0.92	0.31	.32	.90	.51	.65	.21	0.47	0.17	2.26	.00	.00	.00	.00	.00	0.00	0.00	0.00
66	6.400	0.89	0.92	0.31	.32	.90	.50	.64	.21	0.47	0.17	2.25	.00	.00	.00	.00	.00	0.00	0.00	0.00
67	6.300	0.89	0.92	0.31	.32	.90	.50	.64	.20	0.47	0.17	2.23	.00	.00	.00	.00	.00	0.00	0.00	0.00
20 DEG C RATE				0.50						1.35	0.10							0.00	0.00	

NOTE ON NITR PREF: 1.0=NO3 ; 0.0=NH3

1

FINAL REPORT Bayou Verret
REACH NO. 4 Lake Cataouatche #1

QUAL-TX projection for Lake Cataouatche, LA
60% reduction in Bayou

********** REACH INPUTS **********

ELEM NO.	TYPE	FLOW CMS	TEMP DEG C	SALN PPT	CM-I *	CM-II *	DO MG/L	BOD MG/L	EBOD MG/L	ORGN MG/L	NH3 MG/L	NO3+2 MG/L	PHOS MG/L	CHL A UG/L	COLI #/100ML	NCM *
68	UPR RCH	0.0030	31.20	0.52	1693.7	0.0	6.20	2.59	2.59	1.12	0.14	1.58	0.03	5.1	0.	0.00
68	WSTLD	0.0030	31.20	0.56	995.0	0.0	1.47	4.03	4.03	1.19	0.22	0.05	0.20	12.0	0.	0.00
68	WSTLD	0.0030	31.20	0.17	300.0	0.0	6.70	4.03	4.03	1.19	0.22	0.05	0.20	12.0	0.	0.00

********** HYDRAULIC PARAMETER VALUES **********

ELEM NO.	BEGIN DIST KM	ENDING DIST KM	FLOW CMS	PCT EFF	ADVCTV VELO M/S	TRAVEL TIME DAYS	DEPTH M	WIDTH M	VOLUME CU M	SURFACE AREA SQ M	X-SECT AREA SQ M	TIDAL PRISM CU M	TIDAL VELO M/S	DISPRSN SQ M/S	MEAN VELO M/S
68	6.30	4.90	0.0090	66.7	0.000	12678.95	2.20	3201.0	9859154.	4481434.0	7042.3	0.	0.000	2.600	0.000
TOT						12678.95			9859154.	4481434.0					
AVG					0.000		2.20	3201.0			7042.3				
CUM						17203.96									

********** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********

ELEM NO.	ENDING DIST	SAT D.O. MG/L	REAER RATE 1/DA	CBOD DECAY 1/DA	CBOD SETT 1/DA	ANBOD DECAY 1/DA	FULL SOD *	CORR SOD *	ORGN DECAY 1/DA	ORGN SETT 1/DA	NH3 DECAY 1/DA	NH3 SRCE *	DENIT RATE 1/DA	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/DA	NCM DECAY 1/DA	NCM SETT 1/DA
68	4.900	7.37	0.52	0.08	0.00	0.00	0.71	0.71	0.01	0.00	0.20	0.02	0.00	0.00	0.03	0.00	0.00	0.00	0.00
20 DEG C RATE				0.05		0.00		0.30	0.01		0.10	0.01	0.00	0.00			0.00	0.00	
AVG 20 DEG C RATE			0.42		0.00					0.00									0.00

* G/SQ M/D ** MG/L/DAY

********** WATER QUALITY CONSTITUENT VALUES **********

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I *	CM-II *	DO MG/L	BOD MG/L	EBOD MG/L	ORGN MG/L	NH3 MG/L	NO3+2 MG/L	TOTN MG/L	PHOS MG/L	CHL A UG/L	MACRO **	COLI #/100ML	NCM *
68	4.900	31.20	0.8	1693.7	0.0	6.22	2.60	2.60	1.13	0.14	1.58	2.84	0.03	5.1	0.0	0.	0.00

* CM-I = cond umhos CM-II = NCM =

** G/CU M

********** ALGAE AND MACROPHYTE DATA **********

ELEM NO.	ENDING DIST	SECCHI DEPTH M	NITR PREF	ALG SETT 1/DA	ALG LIT LIM	ALG N LIM	ALG P LIM	ALG N&P LIM	ALG TOT LIM	ALG GROW 1/DA	ALG RESP 1/DA	A P/R RATIO	MAC LIT LIM	MAC N LIM	MAC P LIM	MAC N&P LIM	MAC TOT LIM	MAC GROW 1/DA	MAC RESP 1/DA	M P/R RATIO
68	4.900	0.89	0.92	0.12	.31	.90	.50	.64	.20	0.27	0.17	1.27	.00	.00	.00	.00	.00	0.00	0.00	0.00
20 DEG C RATE				0.20						0.80	0.10							0.00	0.00	

NOTE ON NITR PREF: 1.0=NO3 ; 0.0=NH3

1

FINAL REPORT Bayou Verret QUAL-TX projection for Lake Cataouatche, LA
REACH NO. 5 Lake Cataouatche #2 60% reduction in Bayou

********** REACH INPUTS **********

ELEM NO.	TYPE	FLOW CMS	TEMP DEG C	SALN PPT	CM-I *	CM-II *	DO MG/L	BOD MG/L	EBOD MG/L	ORGN MG/L	NH3 MG/L	NO3+2 MG/L	PHOS MG/L	CHL A UG/L	COLI #/100ML	NCM *
69	UPR RCH	0.0090	31.20	0.80	1693.7	0.0	6.22	2.60	2.60	1.13	0.14	1.58	0.03	5.1	0.	0.00

********** HYDRAULIC PARAMETER VALUES **********

ELEM NO.	BEGIN DIST KM	ENDING DIST KM	FLOW CMS	PCT EFF	ADVCTV VELO M/S	TRAVEL TIME DAYS	DEPTH M	WIDTH M	VOLUME CU M	SURFACE AREA SQ M	X-SECT AREA SQ M	TIDAL PRISM CU M	TIDAL VELO M/S	DISPRSN SQ M/S	MEAN VELO M/S
69	4.90	3.40	0.0090	66.7	0.000	26424.83	2.40	5707.8	20547944.	8561643.0	13698.6	0.	0.000	2.600	0.000
TOT						26424.83			20547944.	8561643.0					
AVG					0.000		2.40	5707.8			13698.6				
CUM						43628.79									

********** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********

ELEM NO.	ENDING DIST	SAT D.O. MG/L	REAER RATE 1/DA	CBOD DECAY 1/DA	CBOD SETT 1/DA	ANBOD DECAY 1/DA	FULL SOD *	CORR SOD *	ORGN DECAY 1/DA	ORGN SETT 1/DA	NH3 DECAY 1/DA	NH3 SRCE *	DENIT RATE 1/DA	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/DA	NCM DECAY 1/DA	NCM SETT 1/DA
69	3.400	7.36	0.48	0.08	0.00	0.00	0.12	0.12	0.01	0.00	0.21	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00
20 DEG C RATE				0.05		0.00		0.00	0.01		0.10	0.01	0.00	0.00			0.00	0.00	
AVG 20 DEG C RATE			0.39		0.00					0.00									0.00

* G/SQ M/D ** MG/L/DAY

********** WATER QUALITY CONSTITUENT VALUES **********

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I *	CM-II *	DO MG/L	BOD MG/L	EBOD MG/L	ORGN MG/L	NH3 MG/L	NO3+2 MG/L	TOTN MG/L	PHOS MG/L	CHL A UG/L	MACRO **	COLI #/100ML	NCM *
69	3.400	31.20	1.0	1694.1	0.0	6.50	2.71	2.71	1.15	0.14	1.44	2.73	0.03	5.7	0.0	0.	0.00

* CM-I = cond umhos CM-II = NCM =

** G/CU M

********** ALGAE AND MACROPHYTE DATA **********

ELEM NO.	ENDING DIST	SECCHI DEPTH M	NITR PREF	ALG SETT 1/DA	ALG LIT LIM	ALG N LIM	ALG P LIM	ALG N&P LIM	ALG TOT LIM	ALG GROW 1/DA	ALG RESP 1/DA	A P/R RATIO	MAC LIT LIM	MAC N LIM	MAC P LIM	MAC N&P LIM	MAC TOT LIM	MAC GROW 1/DA	MAC RESP 1/DA	M P/R RATIO
69	3.400	0.88	0.91	0.11	.29	.89	.51	.65	.19	0.25	0.17	1.19	.00	.00	.00	.00	.00	0.00	0.00	0.00
20 DEG C RATE				0.20						0.80	0.10							0.00	0.00	

NOTE ON NITR PREF: 1.0=NO3 ; 0.0=NH3

1

FINAL REPORT Bayou Verret
REACH NO. 6 Lake Cataouatche #3

QUAL-TX projection for Lake Cataouatche, LA
60% reduction in Bayou

********** REACH INPUTS **********

ELEM NO.	TYPE	FLOW CMS	TEMP DEG C	SALN PPT	CM-I *	CM-II *	DO MG/L	BOD MG/L	EBOD MG/L	ORGN MG/L	NH3 MG/L	NO3+2 MG/L	PHOS MG/L	CHL A UG/L	COLI #/100ML	NCM *
70	UPR RCH	0.0090	31.20	0.99	1694.1	0.0	6.50	2.71	2.71	1.15	0.14	1.44	0.03	5.7	0.	0.00

********** HYDRAULIC PARAMETER VALUES **********

ELEM NO.	BEGIN DIST KM	ENDING DIST KM	FLOW CMS	PCT EFF	ADVCTV VELO M/S	TRAVEL TIME DAYS	DEPTH M	WIDTH M	VOLUME CU M	SURFACE AREA SQ M	X-SECT AREA SQ M	TIDAL PRISM CU M	TIDAL VELO M/S	DISPRSN SQ M/S	MEAN VELO M/S
70	3.40	0.80	0.0090	66.7	0.000	45803.04	2.50	5479.5	35616436.	14246576.0	13698.6	0.	0.000	2.600	0.000
TOT						45803.04			35616436.	14246576.0					
AVG					0.000		2.50	5479.5			13698.6				
CUM						89431.82									

********** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********

ELEM NO.	ENDING DIST	SAT D.O. MG/L	REAER RATE 1/DA	CBOD DECAY 1/DA	CBOD SETT 1/DA	ANBOD DECAY 1/DA	FULL SOD *	CORR SOD *	ORGN DECAY 1/DA	ORGN SETT 1/DA	NH3 DECAY 1/DA	NH3 SRCE *	DENIT RATE 1/DA	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/DA	NCM DECAY 1/DA	NCM SETT 1/DA
70	0.800	7.36	0.45	0.08	0.00	0.00	0.18	0.18	0.01	0.00	0.21	0.03	0.00	0.00	0.03	0.00	0.00	0.00	0.00
20 DEG C RATE				0.05		0.00		0.00	0.01		0.10	0.01	0.00	0.00			0.00	0.00	
AVG 20 DEG C RATE			0.37		0.00					0.00									0.00

* G/SQ M/D ** MG/L/DAY

********** WATER QUALITY CONSTITUENT VALUES **********

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I *	CM-II *	DO MG/L	BOD MG/L	EBOD MG/L	ORGN MG/L	NH3 MG/L	NO3+2 MG/L	TOTN MG/L	PHOS MG/L	CHL A UG/L	MACRO **	COLI #/100ML	NCM *
70	0.800	31.20	1.0	1694.6	0.0	6.30	3.91	3.91	1.16	0.15	1.00	2.30	0.04	8.4	0.0	0.	0.00

* CM-I = cond umhos CM-II = NCM =
** G/CU M

********** ALGAE AND MACROPHYTE DATA **********

ELEM NO.	ENDING DIST	SECCHI DEPTH M	NITR PREF	ALG SETT 1/DA	ALG LIT LIM	ALG N LIM	ALG P LIM	ALG N&P LIM	ALG TOT LIM	ALG GROW 1/DA	ALG RESP 1/DA	A P/R RATIO	MAC LIT LIM	MAC N LIM	MAC P LIM	MAC N&P LIM	MAC TOT LIM	MAC GROW 1/DA	MAC RESP 1/DA	M P/R RATIO
70	0.800	0.85	0.87	0.10	.27	.85	.57	.68	.18	0.24	0.17	1.16	.00	.00	.00	.00	.00	0.00	0.00	0.00
20 DEG C RATE				0.20						0.80	0.10							0.00	0.00	

NOTE ON NITR PREF: 1.0=NO3 ; 0.0=NH3

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FINAL REPORT Bayou Verret QUAL-TX projection for Lake Cataouatche, LA
REACH NO. 7 Lake Cataouatche #4 60% reduction in Bayou

********** REACH INPUTS **********

ELEM NO.	TYPE	FLOW CMS	TEMP DEG C	SALN PPT	CM-I *	CM-II *	DO MG/L	BOD MG/L	EBOD MG/L	ORGN MG/L	NH3 MG/L	NO3+2 MG/L	PHOS MG/L	CHL A UG/L	COLI #/100ML	NCM *
71	UPR RCH	0.0090	31.20	1.01	1694.6	0.0	6.30	3.91	3.91	1.16	0.15	1.00	0.04	8.4	0.	0.00

********** HYDRAULIC PARAMETER VALUES **********

ELEM NO.	BEGIN DIST KM	ENDING DIST KM	FLOW CMS	PCT EFF	ADVCTV VELO M/S	TRAVEL TIME DAYS	DEPTH M	WIDTH M	VOLUME CU M	SURFACE AREA SQ M	X-SECT AREA SQ M	TIDAL PRISM CU M	TIDAL VELO M/S	DISPRSN SQ M/S	MEAN VELO M/S
71	0.80	0.00	0.0090	66.7	0.000	15635.36	1.80	8443.1	12158055.	6754475.0	15197.6	0.	0.000	2.600	0.000
TOT						15635.36			12158055.	6754475.0					
AVG					0.000		1.80	8443.1			15197.6				
CUM						105067.18									

********** BIOLOGICAL AND PHYSICAL COEFFICIENTS **********

ELEM NO.	ENDING DIST	SAT D.O. MG/L	REAER RATE 1/DA	CBOD DECAY 1/DA	CBOD SETT 1/DA	ANBOD DECAY 1/DA	FULL SOD *	CORR SOD *	ORGN DECAY 1/DA	ORGN SETT 1/DA	NH3 DECAY 1/DA	NH3 SRCE *	DENIT RATE 1/DA	PO4 SRCE *	ALG PROD **	MAC PROD **	COLI DECAY 1/DA	NCM DECAY 1/DA	NCM SETT 1/DA
71	0.000	7.37	0.64	0.08	0.00	0.00	0.32	0.32	0.01	0.00	0.21	0.02	0.00	0.00	0.11	0.00	0.00	0.00	0.00
20 DEG C RATE				0.05		0.00		0.00	0.01		0.10	0.01	0.00	0.00			0.00	0.00	
AVG 20 DEG C RATE			0.52		0.00					0.00									0.00

* G/SQ M/D ** MG/L/DAY

********** WATER QUALITY CONSTITUENT VALUES **********

ELEM NO.	ENDING DIST	TEMP DEG C	SALN PPT	CM-I *	CM-II *	DO MG/L	BOD MG/L	EBOD MG/L	ORGN MG/L	NH3 MG/L	NO3+2 MG/L	TOTN MG/L	PHOS MG/L	CHL A UG/L	MACRO **	COLI #/100ML	NCM *
71	0.000	31.20	0.9	1694.9	0.0	6.48	4.02	4.02	1.04	0.13	0.24	1.40	0.05	15.3	0.0	0.	0.00

* CM-I = cond umhos CM-II = NCM =

** G/CU M

********** ALGAE AND MACROPHYTE DATA **********

ELEM NO.	ENDING DIST	SECCHI DEPTH M	NITR PREF	ALG SETT 1/DA	ALG LIT LIM	ALG N LIM	ALG P LIM	ALG N&P LIM	ALG TOT LIM	ALG GROW 1/DA	ALG RESP 1/DA	A P/R RATIO	MAC LIT LIM	MAC N LIM	MAC P LIM	MAC N&P LIM	MAC TOT LIM	MAC GROW 1/DA	MAC RESP 1/DA	M P/R RATIO
71	0.000	0.78	0.64	0.14	.33	.65	.65	.65	.21	0.28	0.17	1.35	.00	.00	.00	.00	.00	0.00	0.00	0.00
20 DEG C RATE				0.20						0.80	0.10							0.00	0.00	

NOTE ON NITR PREF: 1.0=NO3 ; 0.0=NH3

1

QUAL-TX projection for Lake Cataouatche, LA
60% reduction in Bayou

INPUT/OUTPUT LOADING SUMMARY

	FLOW CMS	DO KG/D	BOD KG/D	ORG-N KG/D	NH3-N KG/D	NO3-N KG/D	PHOS KG/D	CHL A KG/D	NCM
HEADWATER INFLOW	0.003	0.8	1.0	0.3	0.1	0.0	0.1	3.1	0.0
INCREMENTAL INFLOW	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INCREMENTAL OUTFLOW	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NON-POINT INPUT		0.0	21286.0	1334.8					0.0
WASTELOADS	0.006	2.1	2.1	0.6	0.1	0.0	0.1	6.2	0.0
WITHDRAWLS	0.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OUTFLOW THRU LOWER BNDRY	-0.009	-5.0	-3.1	-0.8	-0.1	-0.2	0.0	-11.9	0.0
DISPERSION THRU LOWER BNDRY		-160.8	1395.5	-218.3	-25.5	-1582.7	45.5	18507.1	0.0
REAERATION		39368.7							
BACKGROUND BENTHAL		-3438.8							
AEROBIC BOD DECAY		-22681.5	-22681.5						
BOD SETTLING		0.0	0.0						
ANAEROBIC BOD DECAY			0.0						
ORGANIC N HYDROLYSIS		0.0		-1116.7	1116.7				
ORGANIC N SETTLING				0.0	0.0				
NH3 DECAY		-9920.6			-2291.1	2291.1			
BACKGROUND NH3 SOURCE					800.3				
DENITRIFICATION			0.0			0.0			
PHOSPHORUS SOURCE							1.6		
ALGAE PHOTOSYNTHESIS		16422.8			-164.2	-708.3	-133.4	171070.6	
ALGAE RESPIRATION		-13264.9			563.8		86.2	-110540.5	
ALGAE SETTLING		-6322.7						-79033.8	
MACRO PHOTOSYNTHESIS		0.0			0.0	0.0	0.0		
NCM DECAY		0.0							0.0
NCM SETTLING		0.0							0.0
TOTAL INPUTS	0.009	55794.4	22684.6	1335.7	2480.9	2291.2	133.5	189587.0	0.0
TOTAL OUTPUTS	-0.009	-55794.3	-22684.6	-1335.7	-2480.9	-2291.2	-133.5	-189586.2	0.0
NET CONVERGENCE ERROR	0.000	0.1	0.0	0.0	0.0	0.0	0.0	0.8	0.0

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.....EXECUTION COMPLETED

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APPENDIX Y

TMDL Calculations

NONPOINT SOURCES:

Loads from Benthic Nutrient Sources and NPS Mass Loads:

Reach	Surface Area (m2)	Benthic source rates (g/m2/day):		Loads (kg/day) from benthic sources		NPS mass loads (kg/day)	
		Ammonia N	Phosphorus	Ammonia N	Phosphorus	CBODu	Organic N
1	5954.5	0.001	0.0025	0.01	0.02	24.0	0.4
2	7271.7	0.0014	0.0025	0.01	0.02	66.0	5.8
3	8834.7	0.001	0.0025	0.01	0.02	36.0	3.6
4	4481434.0	0.01	0.0	44.81	0.00	2000.0	100
5	8561643.0	0.01	0.0	85.62	0.00	3000.0	325
6	14246576.0	0.0125	0.0	178.08	0.00	13280.0	750
7	6754475.0	0.0075	0.0	50.66	0.00	2880.0	150
Totals:				359.20	0.06	21286.00	1334.80

Loads from Headwaters and Tributaries

Name of inflow	Flow (m3/sec)	Concentrations (mg/L)					Loads (kg/day)				
		CBODu	Organic N	Ammonia N	NO2+NO3 N	Phosphorus	CBODu	Organic N	Ammonia N	NO2+NO3 N	Phosphorus
Headwater (Bayou Verret)	0.003	4.03	1.19	0.22	0.05	0.2	1.04	0.31	0.06	0.01	0.05
Davis Pond Freshwater Diversion	0.003	4.03	1.19	0.22	0.05	0.2	1.04	0.31	0.06	0.01	0.05
Louisiana Cypress Lumber Canal	0.003	4.03	1.19	0.22	0.05	0.2	1.04	0.31	0.06	0.01	0.05
Totals:							3.12	0.93	0.18	0.03	0.15

Total Nonpoint Source Loading:			21289.12	1335.73	359.38	0.03	0.21
Nonpoint Source Margin of Safety and Future Growth =	20%	=	4257.82	267.15	71.88	0.01	0.04
Nonpoint Source Load allocation =	80%	=	17031.30	1068.58	287.50	0.02	0.17

POINT SOURCES

Flows and Concentrations from Oxygen Demanding Point Sources:

Name of discharger	Expected flow (MGD)	Expected flow divided by 0.80 (for 20% MOS) (MGD)	(m3/sec)	CBOD5 (mg/L)	CBODu (mg/L)	Organic N (mg/L)	Ammonia N (mg/L)	NO2+NO3 N (mg/L)	Phosphorus (mg/L)
Luling Oxidation Pond[1,2,3]	2.6	3.25	0.14239	10	23	2	4	10	5
ADM / Growmark Ama Facility[3,4,5]	0.01	0.0125	0.00055	30	69	10	5	10	5
Schmill's Gator Farm[3,4,5]	0.01	0.0125	0.00055	30	69	10	5	10	5

Notes:
1. Expected flow and CBOD5 values based on data extracted from EPA's Permit Compliance System (PCS).
2. Assumed organic N and ammonia N concentrations (and their proportion) based on guidance in LTP for advanced treatment.
3. Concentrations for NO2+NO3 and phosphorus are assumed values.
4. Expected flows are assumed values (no information concerning effluent flow rates was available).
5. Assumed CBOD5, organic N and ammonia N concentrations based on guidance in LTP for secondary treatment.

Loads from Point Sources:

Name of discharger	Flow (m3/sec)	Concentrations (mg/L) CBODu	Organic N	Ammonia N	NO2+NO3 N	Phosphorus	Loads (kg/day) CBODu	Organic N	Ammonia N	NO2+NO3 N	Phosphorus
Luling Oxidation Pond	0.14239	23	2	4	10	5	282.96	24.60	49.21	123.02	61.51
ADM / Growmark Ama Facility	0.00055	69	10	5	10	5	3.28	0.48	0.24	0.48	0.24
Schmill's Gator Farm	0.00055	69	10	5	10	5	3.28	0.48	0.24	0.48	0.24
Total Loads:							289.52	25.56	49.69	123.98	61.99
Point Source Margin of Safety and Future Growth =				20%	=		57.90	5.11	9.94	24.80	12.40
Point Source Load allocation =				80%	=		231.62	20.45	39.75	99.18	49.59

OVERALL SUMMARY

	Loads (kg/day) CBODu	Organic N	Ammonia N	NO2+NO3 N	Phosphorus
Point source wasteload allocation (WLA)	231.62	20.45	39.75	99.18	49.59
Nonpoint source load allocation (LA)	17031.30	1068.58	287.50	0.02	0.17
Explicit Margin of Safety (10%)	2157.86	136.13	40.91	12.41	6.22
Future Growth (10%)	2157.86	136.13	40.91	12.40	6.22
Total maximum daily load (TMDL)	21578.64	1361.29	409.07	124.01	62.20
Sums for error checking:	21578.64	1361.29	409.07	124.01	62.20

APPENDIX Z

Ammonia Toxicity Calculations

TABLE Z.1. AMMONIA TOXICITY CALCULATIONS FOR LAKE CATAOUATCHE

Equations are from 1999 Update of Ambient Water Quality Criteria for Ammonia (EPA-822-R-99-014, Dec. 1999).

Use chronic criterion when fish early life stages are present (as mentioned on page 88, this is the same as CCC for early life stages absent when temp > 15°C)

CCC, in mg N/L = $[0.0577/(1+10^{7.688-pH}) + 2.487/(1+10^{pH-7.688})] * MIN [2.85, 1.45*10^{0.028*(25-T)}]$

Note: CCC is the Chronic Criterion Concentration

pH value used in this calculation is average summer value for LDEQ Station 0910 (see data below).
Temperature value used in calculation is estimated 90th percentile summer value for LDEQ station 0910.

Season	Average pH (su)	Temperature (°C)	Calculated CCC (mg N/L)
Summer	7.31	31.2	1.72

pH values for LDEQ Station 0910:

Summer (May - Oct):

Date	Value
10/31/2000	7.12
10/3/2000	7.38
9/12/2000	7.05
8/8/2000	6.75
7/11/2000	7.24
6/13/2000	7.45
5/9/2000	8.19
Average =	7.31

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APPENDIX AA

Responses to Public Comments

COMMENTS AND RESPONSES
LAKE CATAOUATCHE TMDLs FOR DO AND NUTRIENTS
March 25, 2005

EPA appreciates all comments concerning these TMDLs. Comments that were received are shown below with EPA responses or notes inserted in a different font.

COMMENTS FROM LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY (LDEQ):

1. Page 2-5 - 2.3 Point Sources: A list of the dischargers should be included in the report. The list should indicate if the facility was modeled or just included in the TMDL. The list should also indicate the permit limits as a result of this TMDL. Any resulting permit limits should be presented in the Executive Summary and section 7.8 Model Results for Projection.

Response: The point source list in Appendix A indicates which facilities were modeled, which ones were included in the TMDLs, and the effluent concentrations that were simulated in the model (which were set equal to permit limits). As stated in the body of the report, the modeling and TMDLs assume no changes to current permit limits for point source discharges.

2. Page 3-3 - Figure 3.1 Sampling Locations for Subsegment 020303: Stations 020303-15, T1, T2, and T3 are not shown on the diagram. If possible, they should be shown on the figure.

Response: These four stations have been added to Figure 3.1.

3. Page 4-5 - 4.9 Headwater Water Quality (Data Types 21 and 22): The combination of Table 3.1 and the wording of section 4.9 make it appear as if stations 020303-1A and 020303-1B were from the calibration and verification surveys, respectively. As a result, it appears as if parameter values for the calibration and verification surveys were averaged and used as model input for the calibration survey. In actuality, both stations 020303-1A and 020303-1B were from the calibration survey. This was not discernible without the appendices.

Response: Samples 020303-1A and 020303-1B were duplicate samples at the same station during the same survey. To reduce the confusion, Table 3.1 has been revised to show only one station (020303-1) and Section 4.9 has been revised to describe 020303-1A and 020303-1B as separate samples rather than separate stations.

4. Page 7-2 - 7.2 Temperature Inputs: The first paragraph states that LDEQ Ambient monitoring station 0910, Bayou Gauche west of Avondale, Louisiana, was used to assess subsegment 020303 (Lake Cataouachee and Tributaries). This station does not appear to be representative of Lake Cataouachee. This station has only one year of data. Therefore, LDEQ Ambient monitoring station 0296 Bayou Segnette near Westwego, Louisiana, was selected to calculate the 90th percentile temperature value. This station does not appear to be representative of Lake Cataouachee.

Response: Temperature data from station 0910 were considered the most representative of Lake Cataouatche because those were the only routine monitoring data that were available for subsegment 020303. Differences between Bayou Segnette and the Lake Cataouatche subsegment were accounted for by adjusting the Bayou Segnette 90th percentile temperature based on differences between temperatures at stations 0910 and 0296 during 2000.

5. Page 8-1 – 8.0 TMDL Calculations: This section should include discussion concerning how small dischargers should be allocated. An example used by LDEQ is as follows:

"The nonconservative behavior of dissolved oxygen allows many small to remote point source dischargers to be assimilated by their receiving waterbodies before they reach the modeled waterbody. These dischargers are said to have very little to no impact on the modeled waterbody and therefore, they are not included in the model and are not subject to any reductions based on this TMDL. These facilities are permitted in accordance with state regulation and policies that provide adequate protective controls. New similarly insignificant point sources will continue to be issued permits in this manner. Significant existing point source dischargers are either included in the TMDL model or are determined to be insignificant by other modeling. New significant point source dischargers would have to be evaluated individually to determine what impact they have on the impaired waterbody and the appropriate controls."

Response: This text has been added to Section 8.2 of the report.

6. 8.5 Ammonia Toxicity Concerns: Since this waterbody was not listed on the 303(d) list for ammonia, this discussion is unnecessary and should be deleted from the report.

Response: Ammonia toxicity calculations were performed to ensure that the ammonia loadings that will maintain DO standards will not cause any exceedences of the ammonia toxicity criteria. National guidance for ammonia toxicity was used in the absence of any numerical state water quality standards for ammonia. EPA believes this evaluation offers assurances that waters will continue to be free from the effects of toxic substances.

7. Page 9-1 – 9.0 Other Relevant Information: This section should be updated to include the new 4-year sampling cycle.

Response: Section 9.0 describes LDEQ's 4-year sampling cycle.

8. Dissolved Oxygen / Reaeration: It is stated, "the long term average wind speeds for each month of the year for New Orleans were examined and the lowest values within each season were used to calculate the KL values". A more representative approach would have been to use a seasonal average for each season. DEQ does not use extreme limits for input values for any of the modeling parameters.

Response: Section 303(d) of the Clean Water Act and federal regulations at 40 CFR 130.7 both require TMDLs to account for critical conditions. Using a wind speed that is averaged over a month is not considered extreme, and is consistent with using the 90th percentile temperature and critical low flows.

9. BOD Calculations: Total BOD was calculated using a 20-day cycle. It is the general practice of LDEQ to use a 60 cycle.

Response: Resources were not available for 60 day BOD measurements. Use of 20 day BOD data is widely accepted for TMDLs and is considered appropriate for these TMDLs.

10. BOD Calculations: The CBOD values calculated using the BOD Analysis spreadsheet were overestimated due to the fact that NO2+NO3 data values were not used. The resulting ultimate CBOD values were actually the total ultimate BOD values. At the same time, the nitrogen series was also being simulated. In effect, the nitrogen was expressed in two different parameters.

Response: The CBOD values were calculated from the spreadsheet using CBOD values measured in a lab with a nitrogen inhibitor present in the samples. Therefore, the BOD in the model was truly CBOD, and nitrogenous oxygen demand was simulated only through nitrification of ammonia.

11. BOD Calculations: Settling rates were not used in the model. The effect of settling on dissolved oxygen was simulated by SOD. This is not the general practice of LDEQ.

Response: No available information indicated the necessity for including settling rates for BOD. However, settling was simulated for algae.

12. BOD Calculations: Modified decay rates for CBOD were used rather than the bottle rates due to the fact that the samples "were seeded". This is not the general practice of LDEQ. However, average values may be used for reaches with similar water quality.

Response: The laboratory CBOD decay rates were adjusted within normal and reasonable ranges, which is a widely accepted practice for calibrating DO models.

13. BOD Calculations: Bottle decay rates were apparently not calculated for Organic Nitrogen. This is not the general practice of LDEQ.

Response: For most TMDLs, organic nitrogen decay rates are not determined from laboratory data. The use of a reasonable decay rate from published literature was considered appropriate for these TMDLs.

14. Vector Diagram: A vector diagram should be presented in the report.

Response: A vector diagram was not considered necessary because this model consists of one main stem (from Bayou Verret near Highway 90 to southeastern edge of Lake Cataouatche) with no branches.

15. Critical Flows: The first sentence of the second paragraph states that a 7Q10 values for Bayou Verret does not exist. A critical flow values should be calculated for Bayou Verret and the Louisiana Cypress Lumber Canal.

Response: Because no flow data are available for Bayou Verret and Louisiana Cypress Lumber Canal (and because they both have reversing flows), calculation of a 7Q10 flow is not possible. Additional simulations at different flow rates showed that using 0.1 cfs (0.003 m3/sec) made the modeling conservative.

16. Calibration, Verification, Recalibration, and Projection Graphs: Calibration, verification, and recalibration graphs for dissolved oxygen, CBODU, orthophosporus, and the nitrogen series should be presented in the body of the report.

Response: These graphs can be viewed in the Appendices. There are no requirements for placing graphs in the body of the report.

17. Calibration, Verification, Recalibration, and Projection Graphs: Projection graphs for dissolved oxygen should be presented in the body of the report.

Response: These graphs can be viewed in the Appendices. There are no requirements for placing graphs in the body of the report.

18. Calibration, Verification, Recalibration, and Projection Graphs: In general, the calibration and verification plots were not adequate.

Response: The comment does not explain why LDEQ considers the plots to be inadequate. EPA considers these plots to be adequate.

19. Winter Projection: A winter projection should have been performed. LDEQ issues permits based on seasonality.

Response: As discussed in Section 7.1 of the report, summer is the most critical season for meeting the year round standard for DO for this subsegment. Therefore, the summer simulation satisfies the seasonality requirements of the Clean Water Act. The available information for point source discharges indicated that the facilities discharging to this subsegment do not have seasonal permit limits. If any of these facilities wishes to pursue seasonal permit limits, then LDEQ or the permittee can re-run the model to develop seasonal wasteload allocations.

COMMENTS FROM THE GULF RESTORATION NETWORK (GRN):

1. Lack of Implementation Plan and Reasonable Assurances: There is no implementation plan described in these TMDLs at all. I was unable to find any indication of how the necessary reductions in nonpoint source pollution will be obtained. According to EPA guidance, waters impaired primarily by nonpoint sources require a description of its plan for reducing load allocations. Not only do these TMDLs not describe specific BMPs that will be used to achieve the prescribed manmade nonpoint source reductions, there is also no indication of a timeframe for implementation.

Response: Current federal regulations and guidance do not require TMDLs to include implementation plans. The TMDLs in this report do not include implementation plan components, such as descriptions of specific BMPs for reducing nonpoint source oxygen demand or timeframes for implementing BMPs. Although it is EPA's desire for implementation plans to be developed and carried out these TMDLs, time and money were not available to develop implementation plans.

2. Lack of Implementation Plan and Reasonable Assurances: According to EPA guidance, a TMDL can only rely on nonpoint source reductions if reasonable assurances that the nonpoint source load allocations will be achieved are provided. In these TMDLs, there are no reasonable assurances that the 75% nonpoint source reductions for Bayou Des Allemands and 60% nonpoint reductions reductions for Bayou Verret will be achieved.

Response: EPA guidance for TMDLs requires assurances of nonpoint source reductions ONLY when point sources are given less stringent WLAs based on assumptions that nonpoint source loads will actually be reduced. The point source discharges in this subsegment represented an insignificant fraction of the total oxygen demand and their WLAs were not contingent upon any reductions of nonpoint source loads.

COMMENTS FROM LOUISIANA STATE UNIVERSITY AGRICULTURAL CENTER:

1. The TMDL calls for a 60% reduction in the NPS loading of Bayou Verret. Since land uses in this Subsegment are 24.4% freshwater marsh, 30.1% wetland forest and 32.4% water, this level of attainment is unachievable. Only 5.5% of the land area is classified as urban and 5.5% classified as agricultural land use. There cannot be sufficient urban stormwater or agricultural discharge to accomplish any significant portion of the indicated reduction.

Response: In accordance with federal regulations, these TMDLs were developed based on allowable loadings to maintain the existing DO standard (5 mg/L). Specific ways to achieve necessary reductions in oxygen demand would be determined during development of an implementation plan, which is not required for TMDLs.

2. As indicated in the text, this subsegment contains the Davis Pond Freshwater Diversion from the Mississippi River designed to introduce fresh water, sediment and nutrients into this area of the marsh for restoration. The water in the diversion was not sampled nor was the flow determined, however, a TMDL was calculated on this subsegment. We feel that this assessment is incomplete.

Response: The flow from the Davis Pond Freshwater Diversion enters Lake Cataouatche as a distributed inflow rather than as a concentrated flow at a single location. Therefore, flow measurements were not possible for the inflow from the Davis Pond Freshwater Diversion. Because critical conditions for these TMDLs occurs with minimal inflow from the Davis Pond Freshwater Diversion, the lack of sampling and flow data for the diversion had little or no effect on the allowable loadings for the TMDLs.

3. The very high percentage of area in marsh, woodland and water support a determination that the water conditions are normal for the type landscape in this eco-zone and that no TMDL is needed here.

Response: Section 303(d) of the Clean Water Act requires that TMDLs be developed for all waterbodies not meeting existing water quality standards, regardless of land use. Even though this subsegment has high percentages of marsh and woodland, it is still affected by human alterations to the environment, particularly hydromodification (e.g., less inflow of Mississippi River water that is now controlled by levees, dredging of numerous canals and channels, etc.).

4. All of the data were placed in Appendices that were not attached to the TMDL document and are not readily available from EPA thus preventing any review of the conclusions reached or adjustments made. The Table of Sensitivity used in Model calibration could not be found.

Response: All appendices are available (in hard copy format) from EPA upon request. A sensitivity analysis has been added to the report.

5. We concur that the standard may not be achievable, therefore, we suggest that the standard be revised to reflect these conditions.

Response: As mentioned above, TMDLs must be developed based on existing standards. If LDEQ changes the standards for this subsegment, then these TMDLs can be revised accordingly.

COMMENTS FROM BARATARIA TERREBONNE NATIONAL ESTUARINE PROGRAM (BTNEP):

1. The Barataria-Terrebonne National Estuary Program (BTNEP) requests an extension of the comment period for the TMDL for Bayou des Allemands and Lake Cataouatche noticed in the December 1, 2004 Federal register (Volume 69, Number 230). This TMDL was prepared by a contractor for Region 6 EPA. BTNEP will require more time for a thorough review of these TMDLs and for preparation of comments. With the holidays of this month, a 30 day comment period is insufficient as many staff were out of the office. BTNEP would like to thoroughly review this draft of the TMDL. Therefore, we respectfully request that you extend the comment period for an additional 30 days through February 2, 2005.

BTNEP also requests that EPA Region 6 notify the plaintiffs in the TMDL lawsuit of the need to extend the comment period and to request an extension of the consent decree deadline for the completion of the Barataria Basin TMDLs

The BTNEP is very concerned about the potential impacts that TMDLs for nutrients and sediment may have on Louisiana's coastal restoration efforts. The BTNEP is intimately involved in coastal restoration efforts and represents a partnership of 42 public and private agency partners in the effort for coastal and estuarine restoration. Although we do not speak for each

agency partner, we have serious concerns about the effect that TMDLs may have on current and future coastal restoration efforts.

We are very concerned that if the TMDLs are enforced on the river diversion projects that are currently being designed to mimic the historical, natural freshwater inputs, they could limit the amount of Mississippi River water used for restoration in the Barataria Basin due to limitations on the sediment and nutrients in river water. The BTNEP Management Conference considers the re-establishment of natural riverine inputs to be one of our most valuable restoration tools. We believe that a significant limitation placed on our ability to divert reasonable amounts of Mississippi River water into the Barataria Basin for wetlands restoration purposes could seriously compromise our efforts

Response: Text has been added to the Executive Summary and to Section 8 of the report explaining that EPA believes that restoration of these coastal wetlands involves supplying nutrients through managed Mississippi River diversions. The added text also explains that the critical condition for these TMDLs was determined to be low flow (i.e., minimal inflow from diversions). Model results indicated that diversions of additional Mississippi River slightly improved DO concentrations in Lake Cataouatche. Therefore, these TMDLs are not intended to limit diversions of Mississippi River water for coastal restoration.